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Bill Campbell, Jerry Kaplan and Robert Carr of GO

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PORTABLE COMPUTERS

Buying A Laptop

"If you're buying a laptop, you have to answer many of the same questions as you did when you were buying a desktop PC, and deal with a few more issues as well." Page 92

The Road Mac Communicates

"If what you do on your desktop Mac involves a lot of fax, modem, and printer use, you'll find helpful third-party solutions for your Mac Portable." Page 105

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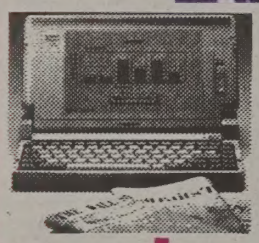

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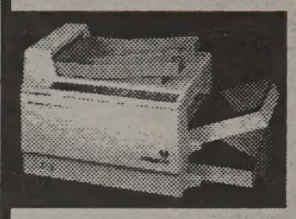

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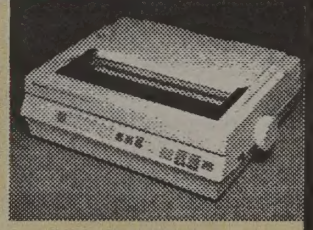

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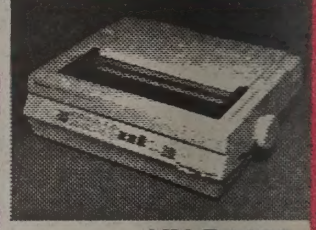

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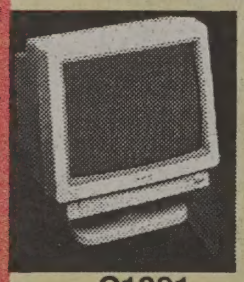

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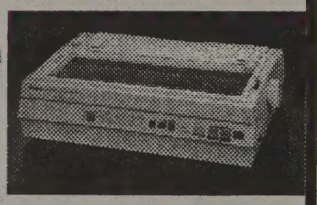

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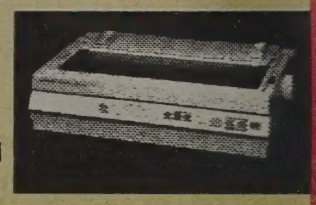

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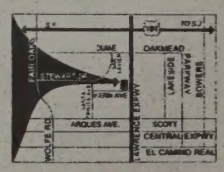

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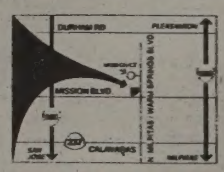

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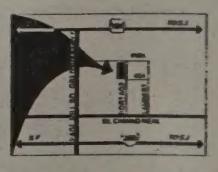

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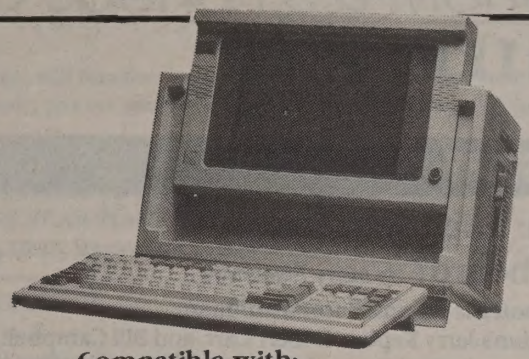

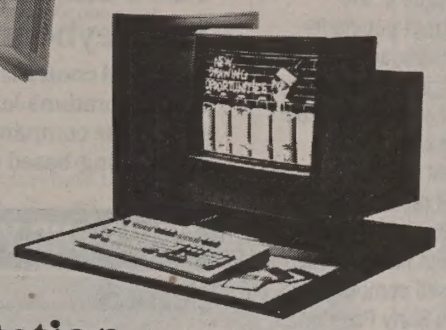

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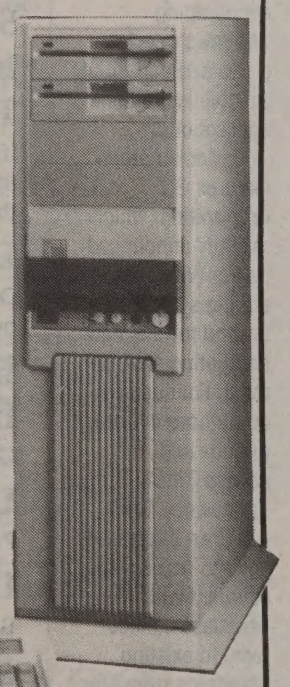

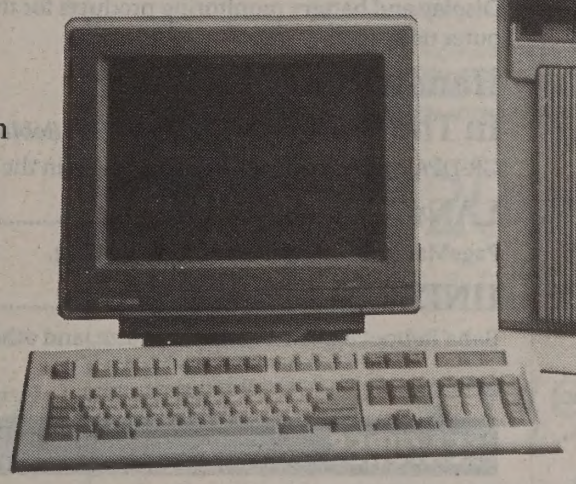

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MICROTIMES™

TABLE OF CONTENTS

A NOTE FROM THE EDITORS:

In spite of the current popularity of keyboard-based portable computers, not everybody finds the keyboard an ideal input device, and recently we've been hearing more about handwriting-based computing. The Sony Palmtop, which accepts handwritten Japanese and Roman-character input, has attracted attention on both sides of the Pacific. GRiD, which pioneered the laptop, has opened new vertical markets with its MS-DOS GRiDPAD computer (see story on page 42), and more recently Microsoft's Bill Gates has been encouraging Windows developers to add pen-input capabilities to their applications.

Our cover story features GO Corporation, which recently announced its PenWindows operating system, optimized for this new computing environment. Founded by co-authors of Lotus Agenda and Ashton-Tate's Framework, GO offers an integrated, easy-to-use environment with seamless connectivity to existing standards from Mac and DOS to mainframes. It remains to be seen, of course, whether fledgling GO will prevail against Microsoft in the standards wars to come, but it's certain that we'll be seeing some innovative and useful technology in months to come.

COVER STORY

The Pen: Mightier Than The Keyboard? *By Mary Eisenhart* 60

Cover and contents photos: Susana Millman
GO Corporation's Jerry Kaplan, Robert Carr, and Bill Campbell explain the company's vision and practical implementation of handwriting-based computing.

NEWS AND VIEWS

Letters 12

Industry Insight *By Paul Hoffman* 16
Apple/Microsoft Look-And-Feel 16
FTC Investigates Microsoft 18
Mergers, Acquisitions 20
High Tech News From Japan 184

Realizable Fantasies *By Jim Warren* 22
Ethereal billboards, quakeproof equipment, disk-based promotions, and DOS alternatives.

Dvorak's Last Column *By John C. Dvorak* 246
Reader disputes Dvorak's views on patent law.

BUSINESS SOLUTIONS

Spectrum 2000: Human Resources Information Without The Mainframe *By Woody Liswood* 25
If you've despaired of finding a PC-based human resources system that's sophisticated enough for your company's needs, this may be the package for you.

Laptop Software *By Ed Kahn* 32
Display and battery monitoring products for the portable computer user.

Handwriting Input In The Real World *By Michael Robin* 42
GRiDPAD users report their experiences in the field.

LANs *By Wayne A. Yacco* 49
PageMaker 4—network-aware publishing.

UNIX *By Bennett Falk* 50
Baba Reboot explains inodes, file size, and other wonders.

FEATURES

Buying A Laptop PC *By Paul Hoffman* 92
If you're shopping for a laptop, you'll be dealing with many of the same questions as the desktop-PC shopper, and a few other issues as well.

Database And Change *By Brock N. Meeks* 96
Efficient information retrieval for researchers on a budget.

The Road Mac Communicates *By Mary Eisenhart* 105
A portable printer and internal faxmodem to increase your Mac Portable's usefulness.

PRODUCT SPOTLIGHT

Product Updates 114

New Products

PC Software 110,114

PC Hardware
Polywell 114
JDR Super Hi Res 114
Micro Express CD-ROM PC 116

Laptops 116,122

Books
Running WordPerfect On NetWare 122
Microsoft Word For Windows Made Easy 122
Procomm Plus 2.0 At Work 137

Reviews

Games *By Mike Markowitz*
Tessarae 137
Warlords 137
Carl Lewis 138
News And Rumors 138

Windows Software 138,140,148

PC Software 154,156

Macintosh Software 162,168,172

Books
The Mac Is Not A Typewriter 172

PC Hardware
SOTA Express Card 176

CREATIVE TOOLS

BMUG *By David Morgenstern* 198
BMUG awaits the arrival of Bill Gates, slated to speak this month.

Amiga *By Matthew Leeds* 208
Professional graphics tools.

Atari ST *By David Hawkins* 212
Good news/bad news.

RESOURCES

Calendar Of Events 217
Software Support Conference 217
SymPro University 218

User Group Network 223

Classifieds 230

Index Of Advertisers 244

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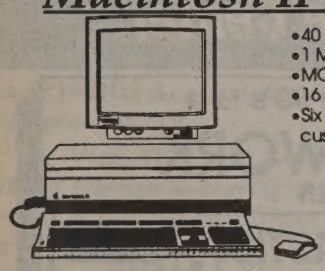
Macintosh II [40/1]

Special



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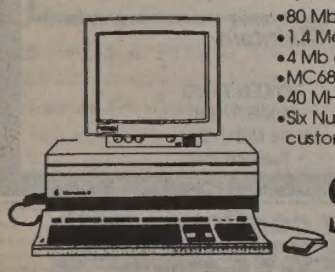

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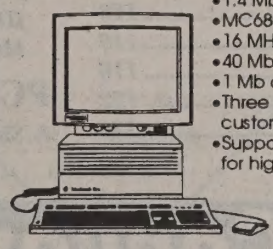

- 1.4 Mb High Density Floppy Drive.
- MC68030 Microprocessor.
- 16 MHz. Clock Speed.
- 40 Mb Quantum Hard Drive
- 1 Mb of Ram.
- Three NuBus expansion slots for custom configuration.
- Supports 8, 24 and 32 bit Quick Draw for high quality graphics.

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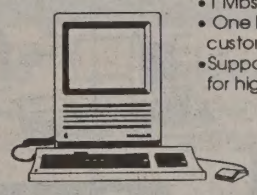

- 1.4 Mb High Density Floppy Drive.
- MC68030 Microprocessor.
- 16 MHz Clock Speed.
- 40 Mb Quantum Hard Drive (19 ms access time).
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- One NuBus expansion slots for custom configuration.
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PRODUCT-ORIENTED TABLE OF CONTENTS

As a service to our readers, we offer this alternative table of contents, with the information organized by product and machine type.

LAPTOPS/PORTABLES

The Pen: Mightier Than The Keyboard? 60
By Mary Eisenhart

Laptop Software 32
By Ed Kahn

Handwriting Input In The Real World 42
By Michael Robin

Buying A Laptop PC 92
By Paul Hoffman

The Road Mac Communicates 105
By Mary Eisenhart

Product Announcements

IBM PS/2 Laptop 116
NBCC 386SX Notebook 116
Librex Notebooks 116
ALR Notebooks 122
Ogivar Internote 286 122
Fora NBS 386S 122

MACINTOSH

BMUG 198
By David Morgenstern

MS-DOS

Spectrum 2000: Human Resources Information Without The Mainframe 25
By Woody Liswood

PC Product Announcements

Tree Based Financial 110
TOPS Client Software For PenPoint 110
Hansen Software For PenPoint 110
WordStar Laptop Collection 110
MyBackup 110
Windows After Dark 114
Polywell 114
JDR Super Hi Res 114
Micro Express CD-ROM PC 116

PC Product Reviews

Sidekick 2.0 154
Hyperdisk 156
Stacker 162
Gofer 162
SOTA Express Card 176

Windows Product Reviews

PowerPoint For Windows 138
Winfax 140
Intermission/Curtain Call 148
Magic Cursor 148
PrintCache 2.3 148

LANS

LAN Column 49
By Wayne A. Yacco

AMIGA

Amiga Column 208
By Matthew Leeds

ATARI ST

Atari ST Column 212
By David Hawkins

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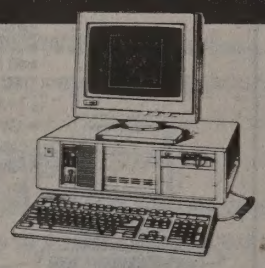

POWER LINE UP

	TEMPO
STEP 486/33	386/25
STEP 486/25	386/20
STEP 386/33	386/16SX
STEP 386/25	286/16
STEP 386/20	286/12
STEP 386/16IS	

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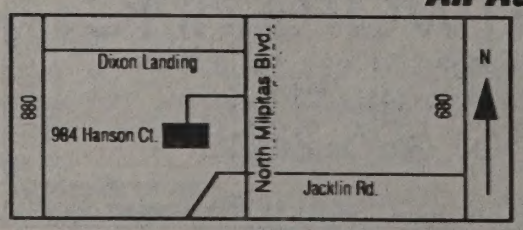

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The VME Technology Center is Season's Early Favorite

by MEGA HERTZ
CPU PRESS

It's Opening Day at the new ball park and the smell of hot dogs is in the air. Due to some fine off-season acquisitions, the VME TECHNOLOGY CENTER TEAM is picked to win it all this year. According to VME's Team Manager, Fred Collins "We've stacked our starting line-up with quality, speed and top performers such as the AST Premium Executive 386SX/20MHz Notebook and the Twinhead Supernote 386SX/16MHz."

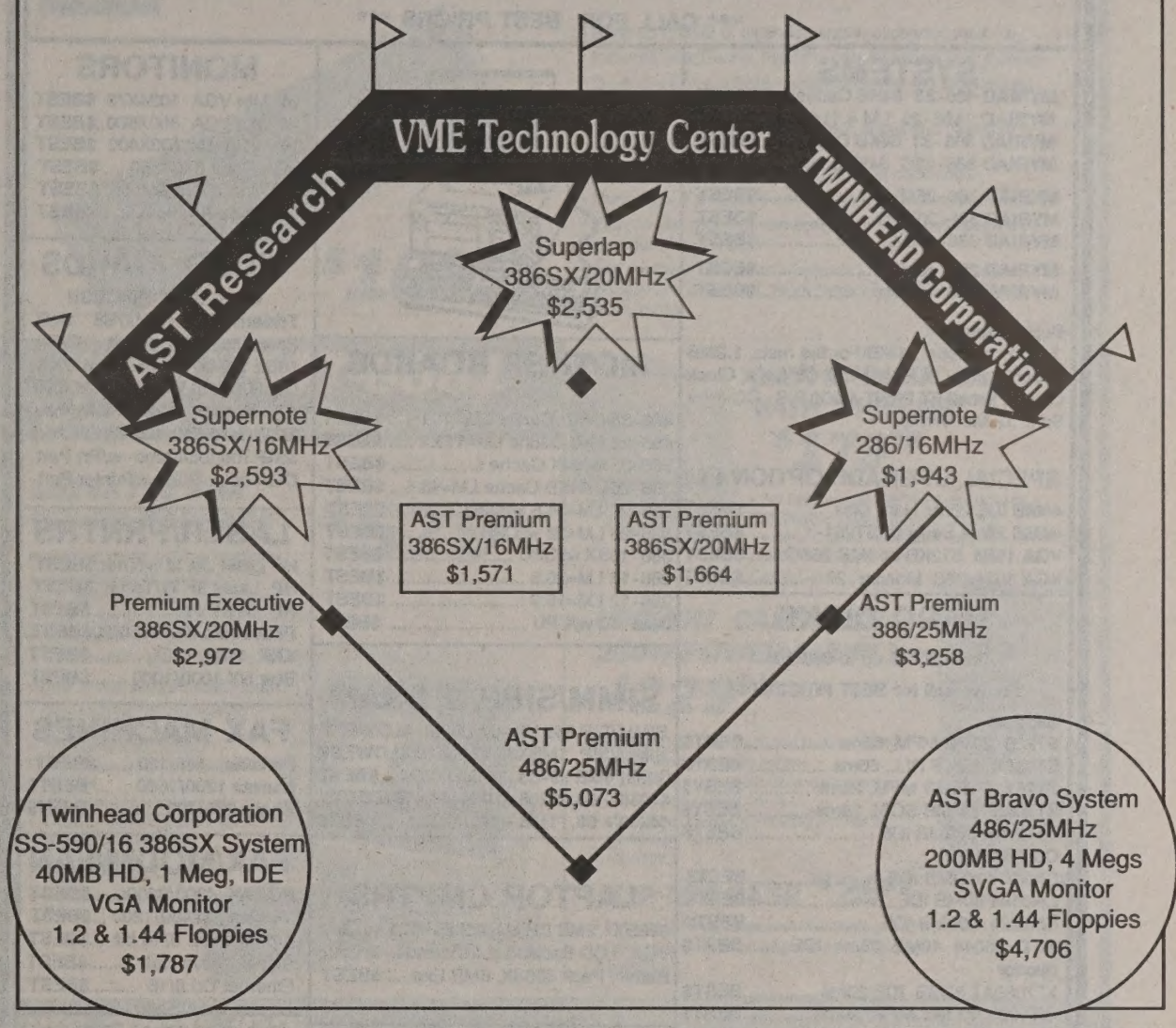
VME TECHNOLOGY CENTER is projecting record attendance figures for the 1991 season due to "very reasonable ticket prices, great location and Super Fan Benefits"

During the off-season, VME signed the TWINSTATION, manufactured by Twinhead Corporation. This risc-based workstation can throw fastball at 12.5 MIPS. TWINSTATION is expected to be called up from the R & D Minor League in June.

The Bad Boy stopper out of the bullpen is the AST Bravo 486, throwing fastballs at 17.84 MIPS. "With this combo, VME can't be beat," pitching coach Phil Zissis said. "Going into this season with the new talent that we have, fans can feel confident that they are getting more value for their money when they come to the VME ballpark". The Twinhead and AST Notebooks, VME's first round draft choices, arrived at training camp late last month and are ready for an incredible season. Both AST and Twinhead are rapidly winning the hearts of fans around the Bay Area and across the nation with their size, speed and quality.

The VME TECHNOLOGY CENTER TEAM is looking forward to playing at their new ball park, located at 760 Harrison Street just one block from the Moscone Convention Center in downtown San Francisco. VME is seeking software fans to take advantage of the new training facility. With easy access and plenty of parking, the VME Technology Center boasts a showroom and soon to be authorized Novell Training Center. There are still 25 Executive Luxury Suites available, all completely furnished with all the amenities. Everyone at VME is very excited about the Home Opener for 1991. For season ticket information call the VME TECHNOLOGY CENTER stadium box office at 800-339-1VME.

Odds Makers are Betting on this Line-up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Supernote 386SX/16MHz $2,593
Supernote 286/16MHz $1,943
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AST Premium 386SX/20MHz $1,664
Premium Executive 386SX/20MHz $2,972
AST Premium 386/25MHz $3,258
AST Premium 486/25MHz $5,073
Twinhead Corporation SS-590/16 386SX System 40MB HD, 1 Meg, IDE VGA Monitor 1.2 & 1.44 Floppies $1,787
AST Bravo System 486/25MHz 200MB HD, 4 Megs SVGA Monitor 1.2 & 1.44 Floppies $4,706

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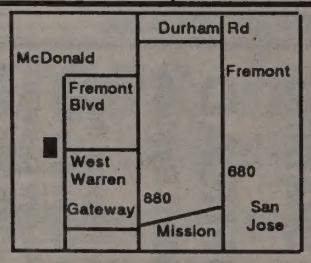

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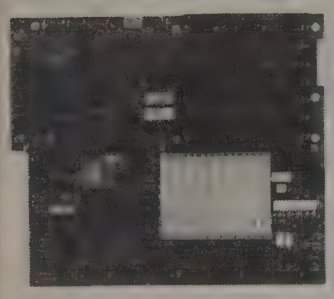

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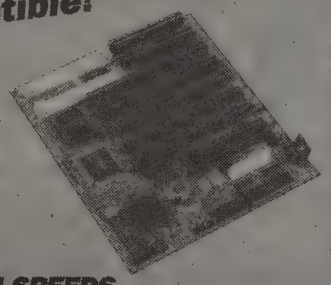

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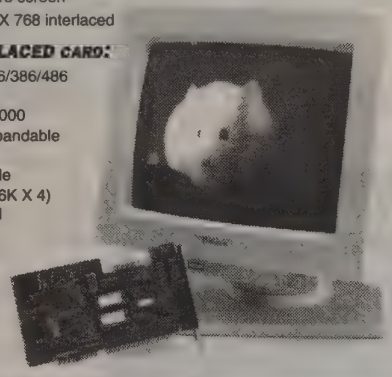

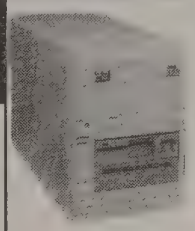

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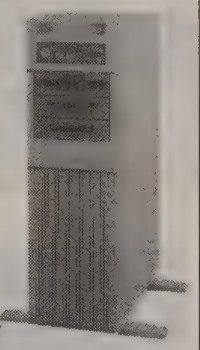

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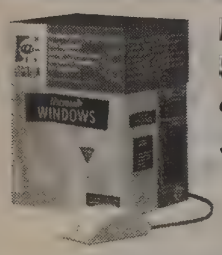

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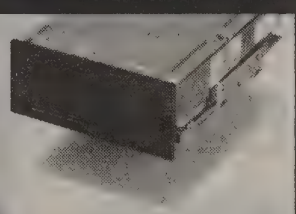

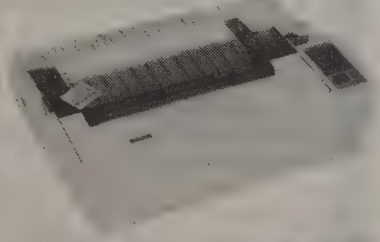

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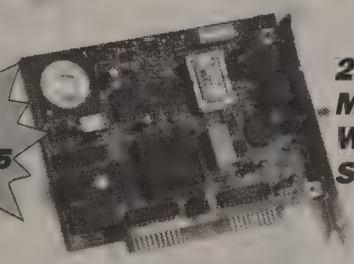

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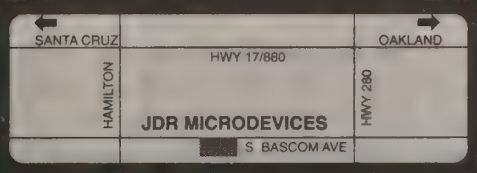

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LETTERS

THANKS FROM ECONET

Thank you for running the excellent article "Worldwide Networking For Social Change" by Brock Meeks in your March 18 edition.

The article gave an excellent description of the activities and mission of the Institute for Global Communications and the Association for Progressive Communications. Most importantly, this exposure is extremely helpful in encouraging computer users to use these communications tools to work for a better world. You and *MicroTimes* are essentially serving the individuals and organizations that we strive to serve; together, we increase their effectiveness. Thank you.

Bill Leland
Director, EcoNet

RESOURCES FOR NORTHSTAR USERS

In your March 18 Letters section, a Northstar Advantage computer owner cries out for hardware and software information.

When Northstar Computers folded two years ago, we bought the Advantage computer line. The purchase included production rights, all hardware and software inventory, test fixtures, drawings, etc. Thus, we continue to offer low prices on Advantage computers, hardware additions such as parallel and serial ports, hard disk upgrade kits, 8/16 boards to allow you to run both CP/M and MS-DOS programs, and all spare parts including video and keyboards. Most items are new and all come with a 90-day guarantee. Sales even include completely new Advantages. We have most Northstar software new in the shrinkwrap for $40 and a comprehensive demo/diagnostic disk for $25. If anyone writes, we'll send a free catalog of parts and prices.

Flashy, expensive, state of the art tools attract many and are required by some; however, there are a large number of users who still prefer the dependable, time-proven, and less expensive route to get the job done right.

Leigh Townsend
Quality Discount Computers, Inc.
Wellington, NV
(For further information, Mr. Townsend can be reached at 702/465-2473 or 415/487-8148.—eds.)

MORGENSTERN FAN SAYS WATCH OUT DVORAK

As a regular reader of *MicroTimes*, I have been increasingly impressed with the wit, the humor, and the computer insights of David Morgenstern. While I doubt that there were many delusions of grandeur on either side when Mr. Morgenstern began writing his column for you, his talent has definitely blossomed. The collection of his writing in the most recent issue of the *BMUG Newsletter* is a tour de force.

In my own humble opinion, Mr. Morgenstern succeeds where John Dvorak could only hope to tread. Yet Dvorak is the acknowledged Computer column Guru. Perhaps the only thing that Morgenstern needs is a press agent trumpeting his talents.

I thank you and Mr. Morgenstern for a job that is continually well done.

James A. Sugar
Mill Valley

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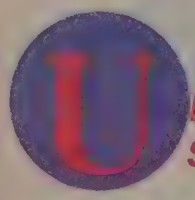

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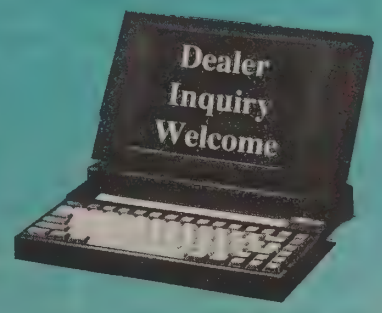

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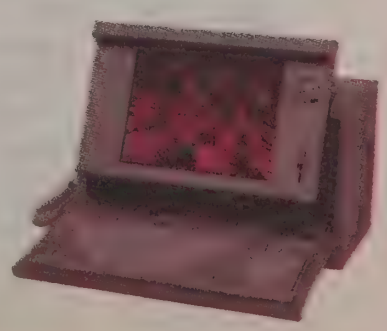

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INDUSTRY INSIGHT

BY PAUL HOFFMAN

JUDGE DEFINES RULES FOR APPLE-MICROSOFT-HP SUIT

United States District Court Judge Vaughn Walker issued rulings on the significant pre-trial motions that set the exact scope of the long-running look-and-feel lawsuit involving Apple, Microsoft, and Hewlett-Packard. Both sides immediately issued press releases saying how happy they were with the results of Judge Walker's decisions, indicating that no one knows what will happen from here on out.

Last year, Judge Walker took the case over from the original judge, William Schwarzer. Walker made it very clear in the 27-page ruling that he agreed with Schwarzer on almost all points, and that the case will proceed as it was when Schwarzer was moved to a different judicial post. Walker's ruling also showed that he had a good grasp on the facts of the case and was not a technophobe, nor was he afraid to make rulings based on fine technical points in the case. He also showed a sense of humor, invoking the likes of artist Roy Lichtenstein, to show how silly one of Hewlett-Packard's arguments was.

Apple and Microsoft both felt that they had won on significant parts of the ruling. Apple pointed out how the judge held that major parts of the Macintosh display were, in fact, not licensed to Microsoft in a 1985 agreement. That agreement allowed Microsoft the right to use any part of the Mac interface that appeared in Windows version 1. Microsoft said it was very happy that Judge Walker's ruling followed the analytical framework that Microsoft had proposed for the case over Apple's suggested framework.

Key points of Walker's ruling:

•Like Schwarzer, Walker doesn't buy Apple's contention that the case should be tried on general look-and-feel issues. "Implicit in Judge Schwarzer's approach to the case is rejection of Apple's fundamental contention that the 'total concept and feel' of the Macintosh graphic user interface is protectable expression."

•Microsoft's claim that the 1985 agreement covered all aspects of the Macintosh user interface because Microsoft could write programs that showed all aspects was invalid. Walker reiterated Schwarzer's comment that this line of argument "defied common sense." He said "...the court concludes that the 1985 Agreement did not license visual displays which are generated by calls from the Microsoft application programs to the Macintosh operating system."

•HP's motion to limit the number of items that it uses in its New Wave environment did not get it very far. Judge Walker said fifty-five items of the New Wave user interface are not covered by the 1985 agreement and are thus still open to dispute.

•Hewlett-Packard's argument that Apple tried to defraud the US Copyright Office by not telling them that the Lisa and Macintosh user interfaces were influenced by Xerox's Star and Smalltalk systems was struck down. "To require the designer of a computer graphic user interface to acknowledge sources of artistic influence would be similar to expecting Roy Lichtenstein to declare in a copyright registration that a particular work is derivative of a named comic strip."

•The ruling went on to say that all parties had sent briefs about the recent Ashton-Tate vs. Fox Software ruling, in which Ashton-Tate lost its copyright to the dBASE line. Walker sarcastically dismissed the ruling in that case: "This court finds the two-page Ashton-Tate decision unhelpful to the resolution of the pending motions."

•Walker definitively ruled in Apple's favor

Judge Walker definitively ruled in Apple's favor that the Lisa and Macintosh are not derivative. He was adamant that adding any significant work to another work makes it not derivative. However, he did not grant Apple's request for summary judgment that its copyrights are valid.

Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on USENET (phoffman @well) and MCI Mail (264-3171). He also writes popular microcomputer books.

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that the Lisa and Macintosh are not derivative. He was adamant that adding any significant work to another work makes it not derivative. "Having reviewed the exhibits offered in connection with this issue, the court concludes there can be no triable issue that the Apple works in suit substantially borrowed expressions of ideas from Xerox's Smalltalk or Star programs."

•However, Judge Walker did not grant Apple's request for summary judgment that its copyrights are valid. He said that "HP and Microsoft's defenses to infringement, such as functionality, scope of protection, merger, and *scenes a faire* doctrines remain in issue and would appropriately be discussed in connection with an adjudication regarding substantial similarity."

A status meeting between all parties and the judge will be held after the middle of April. At that time, Judge Walker will probably set a schedule for when the case will begin in court. Unless the parties come to an out-of-court settlement, the case will be heard and, hopefully, decided in a fashion that makes sense to computer users.

FEDERAL TRADE COMMISSION INVESTIGATES MICROSOFT

Although no charges have been filed, the Federal Trade Commission (FTC) is investigating the methods Microsoft used to control the development of OS/2 and Windows, its two flagship environments.

The story of the investigation broke when software manufacturers reported that the FTC had been asking what they knew about features Microsoft intended to add to future versions of the two systems. Bill Gates, chairman of Microsoft, downplayed the investigation, while at the same time indicating that the FTC was asking for a large amount of documentation on their development.

According to Microsoft, the investigation began last June and involves the COMDEX 1989 joint announcement with IBM about the future of Windows and OS/2. In that announcement, the companies announced that they intended to emphasize OS/2 over Windows, both in development of the platforms and in release of applications. At the time, many developers complained loudly that Microsoft was double-crossing them by luring them toward Windows, then pulling the rug out from under them.

As it turns out, Microsoft did not follow through with the plans in the announcement. For example, the announcement said "Beginning in the second half of 1990, IBM and Microsoft plan to make their graphical applications available first on OS/2." Fortunately for Word and Excel users, that turned out not to be true. The announcement also emphasized that Windows would only be promoted for PCs with less than 2MB of RAM. As many people will tell you, 2MB is the minimum (not the maximum) to run Windows 3.0 in a useful fashion.

Since the investigation is not public yet, it is not clear what triggered the FTC to step in. Gates is quoted in the *Wall Street Journal* as saying that the investigation is only about whether Microsoft made an attempt at restricting the functionality and features of Windows. He said the inquiry "has no relationship to systems and applications in any way, shape, or form." In the past, the FTC has investigated companies who have retarded the advancement of commercial products to the detriment of consumers, so this explanation is plausible.

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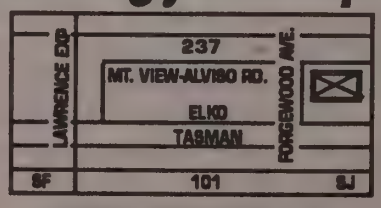

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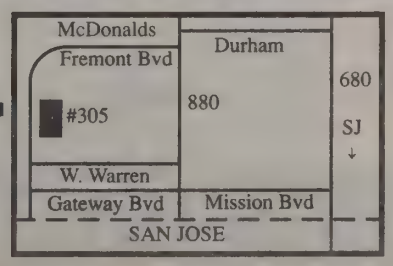

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On the other hand, the investigation could also be about why, six months after the major announcement, Microsoft had completely turned around and started promoting Windows as a prime environment for systems that had more than 2MB of RAM and, at the same time, pretty much stopped talking about OS/2 at all except as a platform for Microsoft's LAN Manager package. The double-reverse caused many major software companies to revise their strategies twice and thus not come out with packages for either platform in a timely fashion. This left Microsoft as the only major player in the Windows word processor and spreadsheet market for many months.

Microsoft has engendered animosity in the software community with its handling of Windows, such as the poor quality of the Windows Software Development Kit and the fact that Excel had Object Linking and Embedding (OLE) technology in it before Microsoft made the technology available to other manufacturers.

Even though the investigation might be currently limited to the announcement, it is not clear where the investigation will end up. Microsoft is cooperating by turning over boxes of information based on FTC requests. There is nothing to stop the FTC from turning an investigation on one point into one on other topics.

After the FTC is finished with its investigation, it turns the results over the the Justice Department, which decides whether or not to bring criminal charges based on the results.

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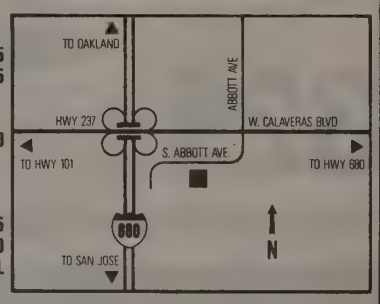

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•Joint development deals are usually not too exciting in this industry—you can never tell how long they'll last and whether anything of value to the end-user will come out of them. Look at the Apple-DEC liaison or Microsoft's and IBM's on-again-off-again relationship.

A recent announcement that hardware heavyweight Hewlett-Packard and database powerhouse Informix would pursue a five-year joint development was accompanied by a rare ingredient that might make it a little more believable: money. Cash-rich HP will buy up to ten percent of Informix's common stock, linking their fates much more closely.

The relationship means that HP customers will get better access to CASE (computer-aided software engineering) tools as well as on-line transaction processing software that has become a very important part of HP's contract business in the last five years. In addition, new versions of Informix software will appear on HP 9000 hardware before that of HP's competitors.

Hewlett-Packard will acquire 5% of Informix stock from outstanding shares and 5% from stock that Informix might issue in the next year.

•Sun Microsystems recently made the unusual move of spinning out its software into two wholly owned subsidiaries that operate separately from the hardware part of the company.

SunSoft will sell UNIX and UNIX tools for both SPARC-based systems as well as other hardware platforms. This includes SunOS, NeWS windowing, the Open Look graphical user interface, and Sun's networking software.

The second company, SunTech, will sell compilers and other software development tools as well as Sun's printing and font tech-

Continued on page 184

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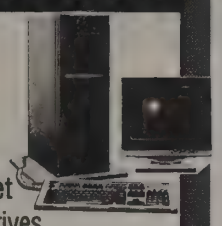

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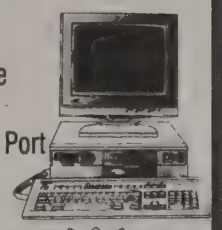

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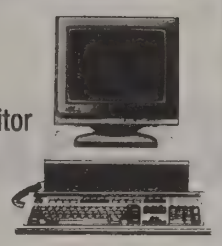

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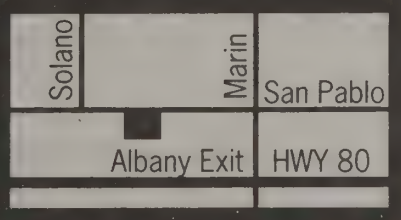

Innovations In Search Of An Innovator

Ethereal Billboards, Quakeproof Equipment, Disk-Based Promotions And DOS Alternatives

BY JIM WARREN

This column addresses what isn't, but could be—and sometimes what is, but shouldn't be. It suggests innovation awaiting no more than an innovator.

SIGNS OF OUR TIMES

Now who's gonna capitalize on this idea? Outside the massive Macworld Expo last January, after dark, one of the most noticeable "billboards" was a large message that existed only as a light projection from one building onto the blank wall of an adjacent building. Just think of the possibilities.

And, aside from innovative opportunities, it undoubtedly poses

REALIZABLE FANTASIES

rich hunting grounds for property rights attorneys—to say nothing of zealous social engineers in local planning bureaucracies.

THE MISSING WP COMMAND

In the ol' daze of traditional [expensive!] phototypesetting, some systems had a useful command that is missing in most of microcomputing's desktop publishing (DTP) and word-processing (WP) programs.

Most have left-justify, right-justify, center and full-justify. But they lack the "push-apart command" available on some old typesetters. It dumped all of a line's spare space into the command's insertion point. The alternative is to left-justify the left part of the text, then set a right-justify tab for the remainder of the text, then tab where all the space is to go. *Oh!*, the intolerable pain of it all!

SHAKER SAFETY

Equipment manufacturers interested in the California market should make sure they provide tie-down holes or handles for gadgets likely to gallivant during an earthquake. They should do so, then advertise the feature—and probably advertise it in Washington State and the Midwest, as well.

My old TV had handles—or at least protrusions through which I could safely drill holes for tie-downs or eye-bolts. When replacing one with a large Sony tabletop unit, I discovered that it was so sleek-'n'-smooth, there was no place to attach a strap and no obvious place to easily drill holes.

Also: Here's an earthquake alternative for monitors and the like: Put 'em on those swing-arm monitor racks, like Curtis and Microcomputer Accessories offer. They'll swing and sway, but stuff'll likely stay in the saddle during a quake (my kitchen cabinet shelves, on sliders, all jiggled part-way open in the '89 quake, but not a single plate or bottle jumped off).

And, restrain your PC's power cord, or attach a small bunge-strap to the computer to keep it from galloping off the desk or shelf in the next shaker. The computer might survive a thirty-inch drop to the floor, but its disk will certainly dislike the fall—or at least the sudden stop.

INTERESTING POTENTIAL

The Canadian British Columbia tourist agency distributed a Mac disk for free a few months ago. It had great potential, but left most of it unrealized. Nonetheless, it's worth applause as a first effort, and worth examining for pursuit of follow-up efforts. Get one from 800-663-6000.

It was animated, but had no color. It was cute, but had no information. Redone, it could be a potent tourist tool. It could have listed hotels and motels, their ratings, rates, phones and addresses. It could have listed eateries and their menus; sites and their routes; events and their contacts.

It could have had maps—big maps and little maps, road maps, topo maps, hiking maps and boating maps. It could have given the ferry routes and their seasonal schedules. *It coulda been a contender!*

So, okay—go do it—for AAA, Consumers Union, Chambers of

Continued on page 214

GEOS from Berkeley's GeoWorks is a low-cost, fast, compact multitasking operating system that runs well on any PC from an 808x or brain-damaged 286 on up. It requires nothing more than a half meg of memory and the smallest of hard disks.

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Jim Warren founded InfoWorld, *the DataCast proposal for broadcasting paperless newspapers, Video Initiative, Wireless Digital and one of the nation's largest public microcomputer conventions. He was founding host of PBS' "Computer Chronicles," founding editor of* Dr. Dobb's Journal, *founding President of the Microcomputer Industry Trade Assn. and has chaired various computer professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics. Most recently, he organized and chaired the First Conference on Computers, Freedom & Privacy in March of this year, co-sponsored by more than a dozen diverse nonprofit organizations.*

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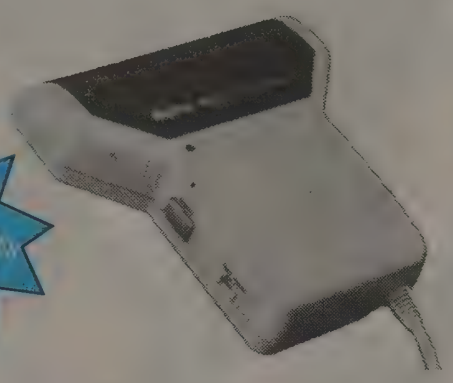

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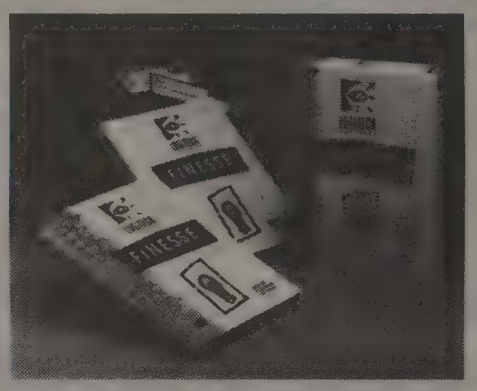

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Spectrum 2000: Human Resources Information Without The Mainframe

Modular PC-based software for sophisticated requirements

BY WOODY LISWOOD

Every Human Resources professional uses some form of Human Resource Information System (HRIS). If you're one of the fortunate few among them, your HRIS works the way you want it to. It's computerized where it makes sense, has an exceptional audit trail where necessary, stores the history you always need where you can get it instantly and accurately, and generally does what you want, when you want, with a minimum of effort and cost.

If you're one of those folks, write us a letter about it.

On the other hand, as I travel through Human Resource land, talking and consulting about computers and HRIS systems, I almost invariably hear from HR professionals that their system doesn't work, that they can't get reports from it, that it is unresponsive to their needs, that the DP folks *still* don't cooperate in developing reports in the mainframe environment, and that the system is either too large or too small. There also seems to be general dissatisfaction about what an HRIS really is and what it could or should be doing.

WHAT IS A HUMAN RESOURCE INFORMATION SYSTEM?

One definition I particularly like to use is that an HRIS is a system, normally thought of as computer driven, which is used to acquire, store, retrieve, manipulate, analyze, and distribute information regarding an organization's human resources. A turnaround document should be as easy to design and produce as a Salary Plan. An employee benefit statement should come rolling off the system as easily as a word processed job description.

There are multitudes of items to worry about if you are considering purchasing, developing, or changing your HRIS. One popular criterion is the number of successful installations for that software package—although, of course, if this were universal, no new product would ever make it to market. Spectrum 2000, a PC-based HRIS package, has over 1,500 direct installations.

FEATURES AND INSTALLATION

Spectrum 2000 is easy to install. Put the first floppy in your A drive, type install, hit a carriage return, then follow instructions. Lots of disks, but no big deal considering the twenty or so disks you now need to install, say, WordStar.

As you'd expect and require from a robust HRIS, there is multilevel password protection, both for system entry and within the system itself. Spectrum 2000 works from multiple windows and popup menus. If you have any experience with micro or mainframe computers, all will be rather obvious. Without this background, the instruction manuals and training you receive during installation will get you up to speed, so you're quickly acting as if you had been a computer maven all your career.

Spectrum 2000 has two levels of menus. The designated system administrator has

The system administrator can change or create sequences as necessary, as well as customize almost every field and table so that the system will be your system.

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complete access to the entire system and can make modifications as desired.

To use these areas most effectively, you will need to understand the database which underlies much of Spectrum 2000. To do extensive modifications, you will need to learn R-BASIC and Revelation (the underlying database engine) or hire someone who already has those skills. Spectrum 2000 also provides customization services as part of their agreements with their clients, so you always have technical support quickly at hand.

From the Master Menu, you can ADD new employees, UPDATE existing Employee data, CREATE or RUN reports, and UPDATE or MODIFY tables, among other things.

Entering employee data into the system is as easy as going through a number of screens and filling in the blanks. The main entry screens are:

Personal Data
EEO
Organization/Location
Status
Job and Pay Data
Spouse and Dependent Data
Previous Employment Data
Military Service
Continuing Education, Training & Licenses
Emergency & Medical Information
Formal Education
Performance Review

While the sequence might not be to your personal taste, the menu covers the standard information that any company might like to keep about employees. I could not find any significant Human Resource categories that were left out of Spectrum 2000.

Another set of screens exists behind this first set. Spectrum 2000 calls this the Employee Update Page 2. Here you can add:

Employee Termination
Credit Card Records
Language Skills Information
Individual Information
Test & Interview Results
Payroll Related
Benefits
Section 89
Union
Earnings History
OSHA Accident
Grievance
Job Seniority

Spectrum 2000 looks at "individual data" as Carpool Number, Locker Number, Security Pass Number, Parking Number, Transportation, Clearance Level, Clearance Date, Company Car; an additional sixty-seven fields are available for your own particular company use.

While this might seem a somewhat fragmented approach to getting data into the HRIS, in practice, it makes a lot of sense. When you set up Spectrum 2000, you can automate the screen sequence so that as you enter data, the screens flow in the order you prefer. As you complete entering data into a screen, pressing the F9 key will automatically pull up the next screen in sequence. Many of these sequential screens also show data from other screens so that you can see contextual information where it is important, in addi-

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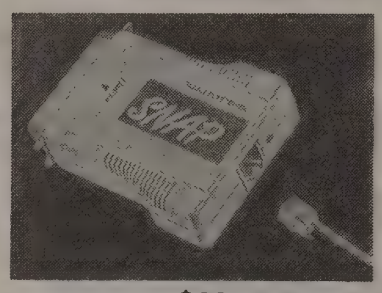

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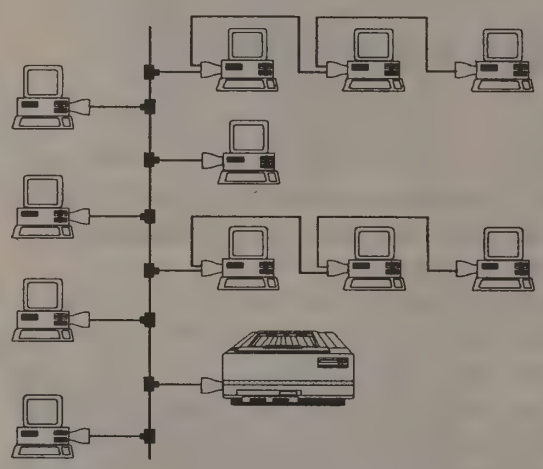

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tion to the screen in which the data was entered. In fact, the system administrator can change or create sequences as necessary, as well as customize almost every field and table so that the system will be *your* system, not Spectrum's system.

You can purchase up to ten additional modules to work along with Spectrum 2000. These include:

Applicant Tracking
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Pay Planning
Extended Benefits
Job Evaluation
Attendance Tracking
Position Control
Industrial Health & Safety
Flexible Benefits
COBRA

Installation of the additional modules is also simple. Copy the appropriate files into the directory that contains Spectrum 2000, run Spectrum 2000, press the F6 key and follow instructions.

REPORT GENERATION: A MAJOR PLUS

Dee MacKenzie, a system administrator at Applause, says her company loves the package, which is running under DOS 4.0 on a four-user PS/2 based network.

Report generation is something MacKenzie's especially pleased with: "We love the reports we can get off of it, and how easy it is to customize our own reports." Applause doesn't do all of its reports within Spectrum 2000, she adds: "We export data to a Lotus file to do calculations."

Kyle Smith, Systems Administrator, is a Spectrum 2000 user from Alta Bates Hospital in Berkeley, which has the system up and running. Their system covers six thousand employees and one of the first modules they had up and running was Applicant Tracking. Smith finds the product "very accommodating for solving problems," adding, "we do lots of customizing ourselves."

Jeanine Huey, a Compensation and Benefits Specialist from Alta Bates, is a user in a 30 drop LAN. She says that she's able to produce reports "instantly." Among other things, she uses the system for "diagnostics for our performance evaluation system." At Alta Bates, Smith would like to see local printing added to the system; Huey would like "more history on more different items."

Getting data into the system is one thing. Getting it out in usable form is something else again. Spectrum 2000 comes with a multitude of standard reports—over one hundred reports in the system I tested. All the standard EEO and Compensation reports are there as well as a wide variety of lists and consolidations based on the various screens and tables.

The problem with having a hundred or more predefined reports is that these reports may not be set up the way you want to do business. To the extent that you think like the Spectrum 2000 report writers, you'll have instantly usable reports. I suspect that if you printed each of those hundred reports, they'd give you lots of ideas for reports which may be really useful in your own work.

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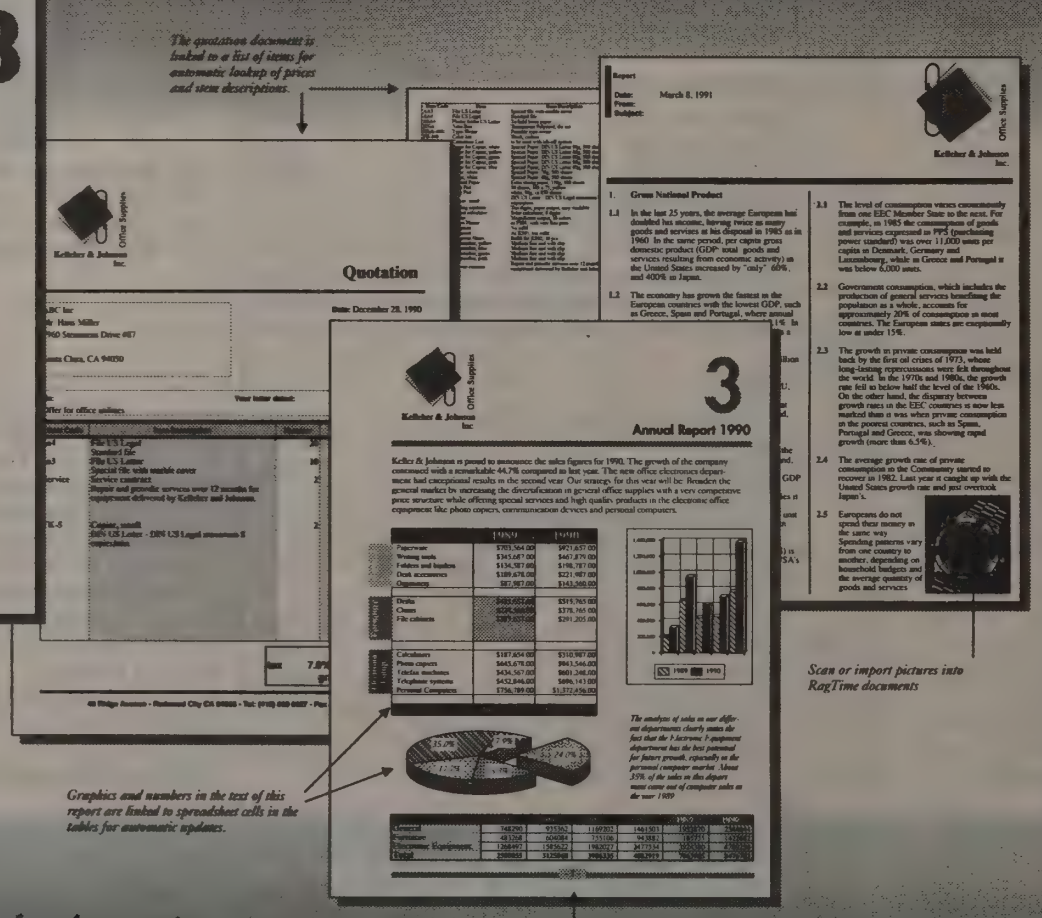
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640K RAM
20MB hard drive

Specifications
Maximum files: Unlimited
Maximum records per file: 2.4 billion
Maximum fields per record: 65,000
Maximum characters per field: 65,000

Network Compatibility
IBM PC-LAN
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is relatively easy to use. You'll need to understand how computers work, and particularly how Spectrum 2000 uses report logic and mathematics, but after a few lessons, or working through a workbook, you should be able to create most of the reports you need. If not, you can always custom code a report or have Spectrum (the corporation) do it for you. In either case, the relational capabilities of the Spectrum 2000 system will make most of your reporting requirements rather easy to solve.

I also ran a good number of reports using the HP LaserJet II printer driver which accompanied my copy of Spectrum 2000. I found no problems. When I specified a report larger than eighty columns, I found that the driver was already selected for landscape printing and that the appropriate fonts were also selected. There was no capability to use proportional fonts and printing through the system, although one of the areas did produce letters and benefit statements. If you do need fancy fonts and all that, you might want to print the report to disk, then use your favorite word processor to edit the document, add the fonts and graphics you want, then do the printing.

When visiting Spectrum's headquarters in Denver, CO, I was shown the new matrix report writer slated for the next Spectrum 2000 update. From within the Spectrum 2000 system you will be able to do crosstabs in any numeric field in the database. That may make your life quite a bit easier. I know that I would've given anything for a matrix report writer when I had to live with the day-to-day ad hoc requests I used to get from my management.

In my opinion, the next step should be to add a statistics module to the database. You should be able to run a correlation coefficient between any two fields, based on any type of select criteria at any time. For example, if you want to test your performance appraisal system, you might want to run a correlation coefficient between percent of increase and performance appraisal score, hoping that there is some relationship. You can start to get there with the matrix report writer, since it is easy to break out performance scores and then calculate percent increases. It would be better to get that as well as the statistical significance between those to items. That assumes, of course, that you *do* enter a numerical score into the database for performance appraisal results.

NOTHING'S PERFECT...

As with all systems; I do have some nits to pick. The first two revolve around Comparatio. It is one word. Spectrum 2000 uses two. Also, Comparatio should be displayed as a whole number, not as a decimal. Meaning is the same, but the American Compensation Association (ACA) standard practice is to display it as a 90 rather than .90.

A number of table fields display on the screen as a two-character field when you can actually type in four, five, or even more characters. This is actually a design feature of the underlying database, and in some cases may turn out to be a great help rather than a hindrance, but I find it disconcerting. Spectrum 2000 uses variable length fields to store the data in. That means that each field contains only the data keyed into it by the operator—you might designate only fifteen characters for a last name, but if you need to key in a last name of more than fifteen characters, Spectrum 2000 will handle it. The system administrator can also set up the fields to only allow input as displayed on the screen.

An extensive help system purports to give context-sensitive help. I found the help screens rather cryptic and not especially helpful. I would have designed some of the system differently—for instance, I would have packed most of the sensitive and unchangeable data about an employee in a single screen rather than across several separate screens—things like history and EEO data.

As I travel through Human Resource land, talking and consulting about computers and HRIS systems, I almost invariably hear from HR professionals that their system doesn't work.

As mentioned earlier, I would also add a statistics module to the report writer. If I had regression equations available within the database, I could then create a salary survey database, drop the salary survey information, aged appropriately, into a salary planning report which used the appropriate regression results to predict next year's salary line. Then I would take the merit budget indicated by the salary plan and automatically develop a payout matrix based on that predicted and needed budget. (Actually, if you want to develop the skills, you can program that yourself using the RBASIC language which is part of the database.)

From users, I heard very little criticism. MacKenzie found that exporting dates was a problem since Spectrum 2000 normally wrote the day before the month. However, it was rather easy, she said, to just write a special routine so that month would come before the day.

Lastly, I worked with Spectrum 2000 on an ALR 386 20MHz computer with 4MB of memory, a 135MB hard disk, and an NEC VGA Engine display card. Everything worked perfectly until I left Spectrum 2000, whereupon there was a complete hang and I needed to do a warm boot to restart the computer. The Spectrum 2000 folks thought that it might be a TSR problem, but I eliminated everything from memory and still had the problem. Not a big deal, but could be a major problem on a network if the solution is not worked out. ■

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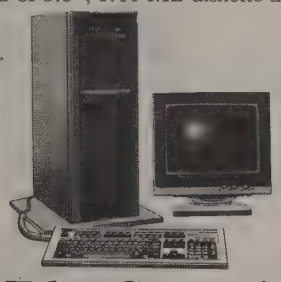

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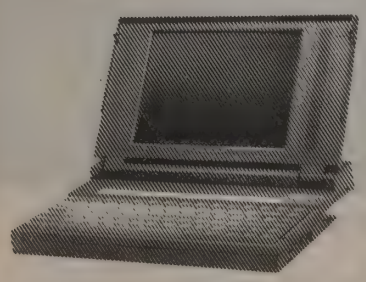

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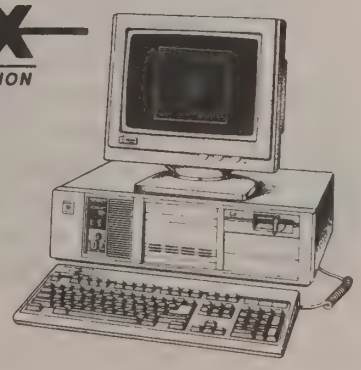

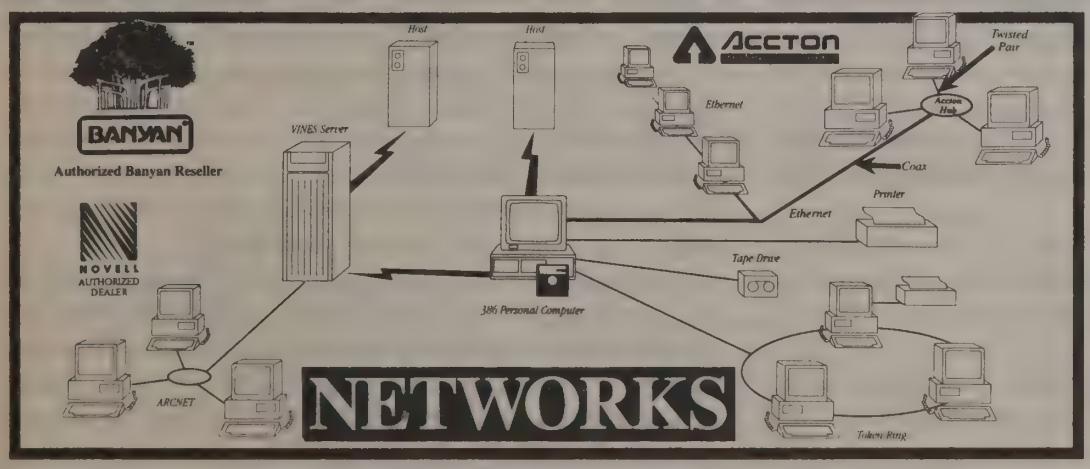

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Laptop Software

New Packages Especially For The Portable Computer User

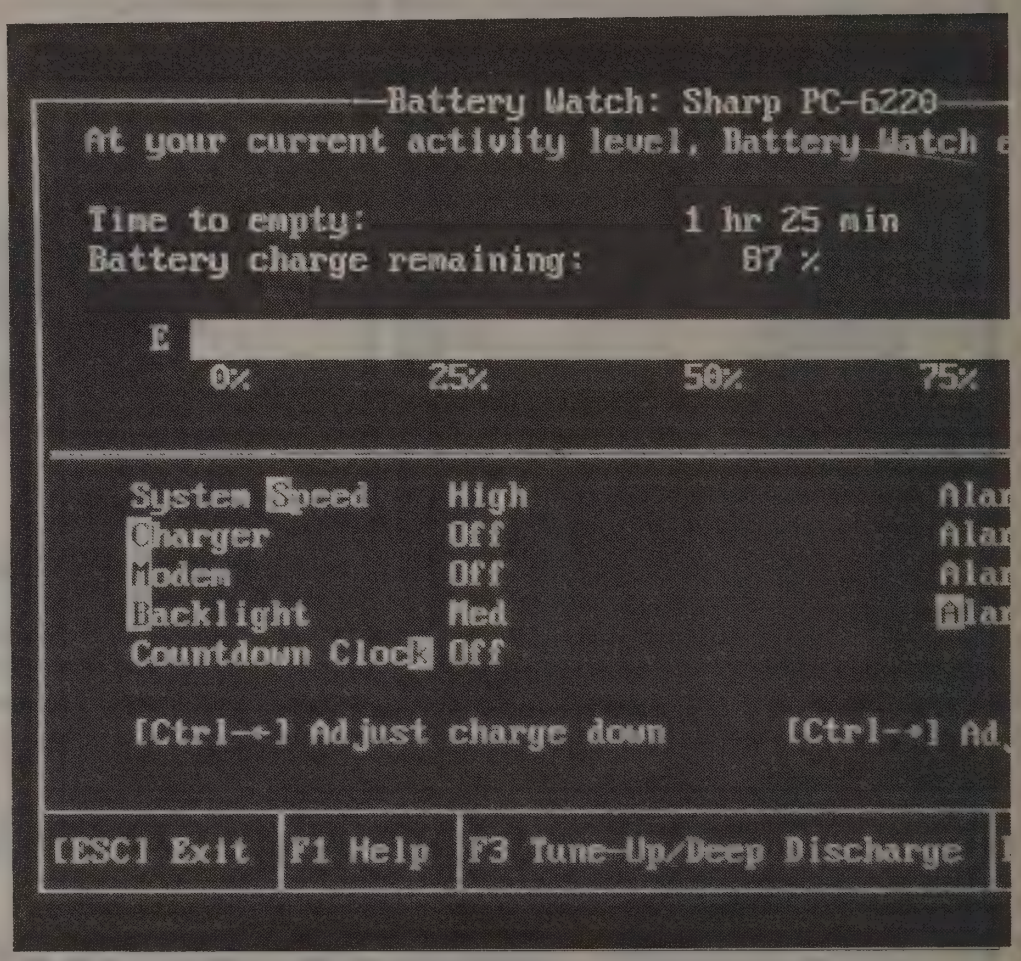
BY ED KAHN

Once a tiny niche in the computer business, laptops and notebook computers now account for a huge segment of the market and are the fastest growing part of the whole industry. By some estimates, laptop sales will increase by as much as 40% this year.

The big guns are readying their entries—currently laptops by IBM, Digital, Unisys, and NCR are waiting in the wings. As miniaturization proceeds, the power that we associate with desktop units becomes available on laptops. In the future we will have notebook computers far more powerful than today's most powerful desktop units.

Despite the size of the market, there is a serious lack of software designed specifically for laptops. This month, I've found a couple of products designed specifically for portables.

In general, laptop computers rely on software that works on desktop units. This, fortunately, provides the compatibility we want between our desktop and laptop computers. However, laptop computers are completely different from desktop machines in at least two respects. The first is that most laptops rely on a radically different kind of display device than our desktops; the second is that most laptops have the capability to run on batteries. Our specialized software addresses these two areas.



Battery Watch Pro is a memory resident program that works like a fuel gage.

LAPTOP ULTRAVISION

For years, laptop users have been plagued by displays much less clear than those available on top-quality color monitors. This is one of the major reasons users want desktop computers for their primary machines. One common user complaint is that it's impossible to find the small blinking cursor on the portable units. Another is that users simply don't have as much control over the appearance of the screen as they have on desktop machines.

Much of that has now changed with the introduction of Laptop UltraVision ($69.95). This program lets you do just about anything you can imagine with the display of the laptop, especially if it is attached to an external color monitor.

The most important single feature of the program, which is memory resident and takes up just 16K on a VGA system and 9K on an EGA computer, is that you can easily make the cursor come up as a block instead of the disappearing line we've all come to hate. But that's just the beginning. In addition, you can control the number of lines that will appear on the screen—34, 43, 50 or 60 lines per screen in VGA.

But hold on, there's more. If you're tired of the typeface that displays on your screen, Laptop UltraVision allows you a wide range of alternatives. These are easily selected and will give you just the look you want—if you want a display that gives you 50 lines per screen and a Roman typeface, no problem. You can also get samples of the many typefaces that are available, and can even change these from application to application. I played around with some very thin-lined and delicate typefaces that made the screen much more readable to my tired eyes. All in all, this is a really flexible software package that offers features not normally available even on a desktop.

A final area that Laptop UltraVision covers is the color or grayscale renditions in the display. This program gives full control over how colors are handled by the laptop display or an attached color monitor. A significant advantage of this kind of color control is that you can get true underlining—which sounds like a little thing, but if we are trying to control the display to give us what we want, we may as well see underlined text on our display when we specify it. Getting true underlining is fairly complex, but the task is made simple with this software

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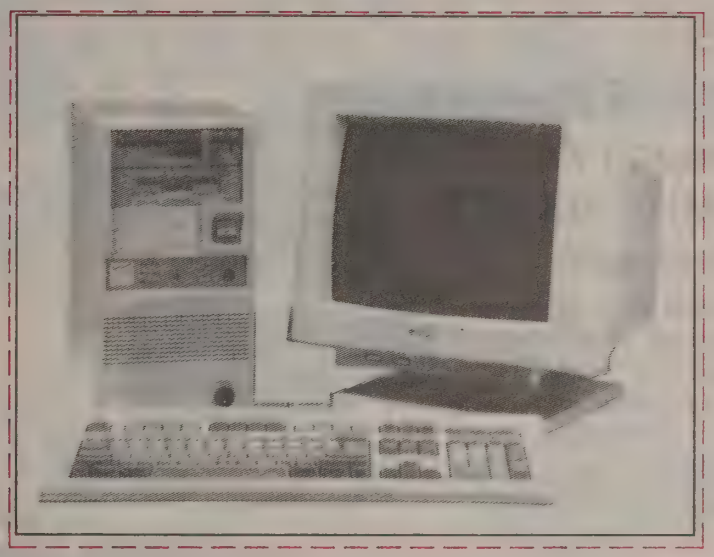

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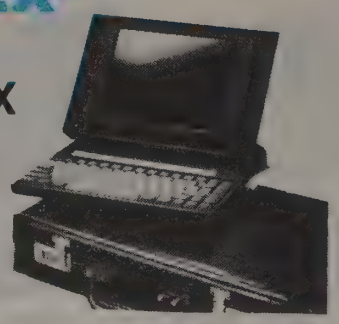

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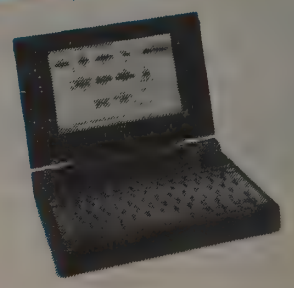

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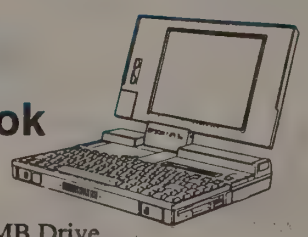

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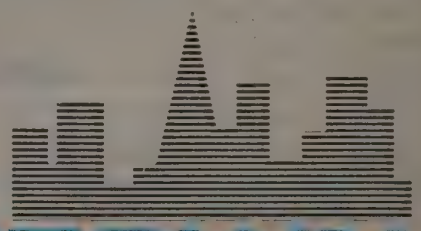

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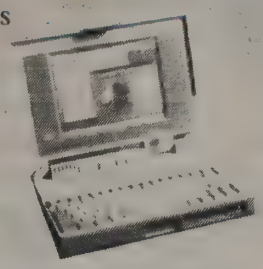

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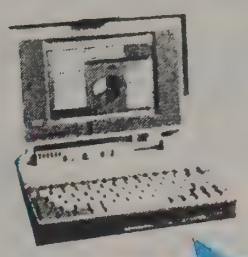

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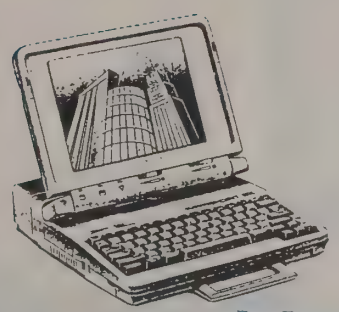

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package.

Some routines are included on the distribution disk that comes with the package; others are detailed in complete instructions in the manual. The documentation discusses the task in terms of specific software and version, so if you want underlining and use WordPerfect version 5.1, the instructions for how to set it up are included. Once you've followed the instructions, formatting will be automatic from then on.

This is a worthwhile software package for anyone who's longed for better kind of control over laptop displays. A companion product for desktops is also available from the same company. If you buy the laptop version, you'll get a card for ordering the desktop version at a reduced price. The desktop version also allows you to print up to 132 columns and offers a few other refinements not available to laptop displays.

BATTERY WATCH PRO

The second piece of laptop software is a new version of Traveling Software's old Battery Watch program. Battery Watch Pro ($49.95) is a vastly improved fuel gauge for tracking the amount of time left in a battery pack. The old version had to be specifically designed for your computer, but there were simply too many computers on the market, so the folks in Bothell decided to make a generic version of the product.

You install the memory resident program, which takes about 6K of RAM, and tell it how long your rechargeable battery is supposed to last. It creates a fuel gauge based on this information.

In addition, it keeps track of just how long you're able to use the battery before it goes dead. It then fine-tunes itself to an average of the last ten cycles you have gone through. This means that it's constantly adjusting itself to accommodate your particular usage patterns and the condition of the battery itself.

Another feature of the program is that it includes a switch which allows you to completely deplete the battery before recharging. NiCd batteries need to be completely dead before a full recharge in order to operate at maximum efficiency. This feature helps you get the most out of your rechargeable battery.

The only problem I have with the program is that I sometimes use my computer with its battery pack and sometimes with the AC power supply. For users like me, the package does little except get confused. But for those who really use their portables on battery most of the time, this is an indispensable program. ■

RESOURCES:

Battery Watch Pro $49.95
Traveling Software
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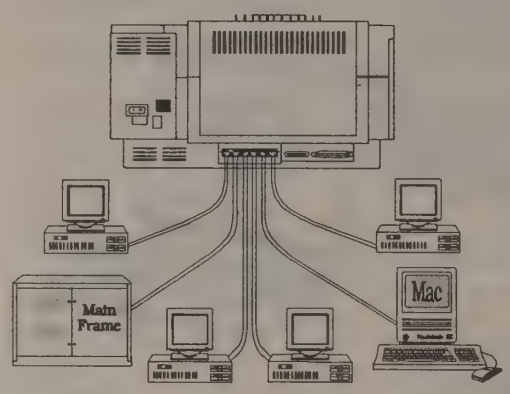

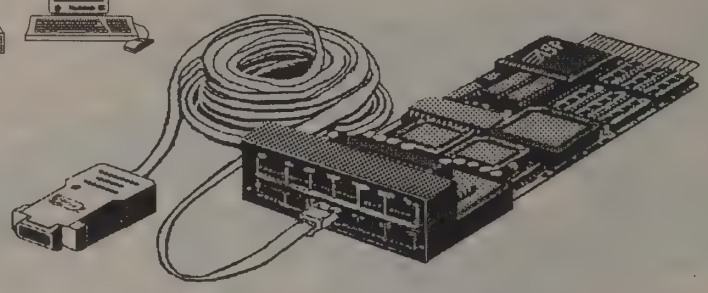

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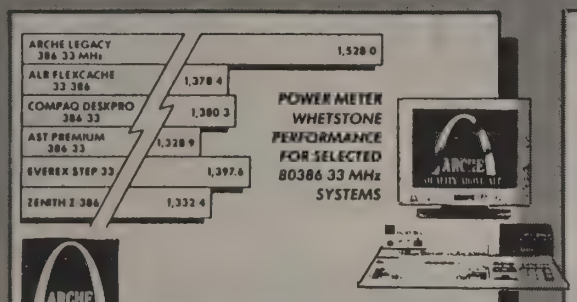
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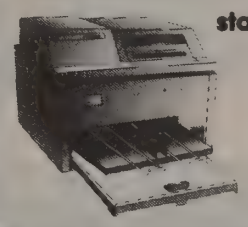

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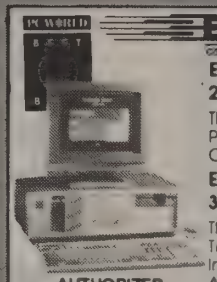

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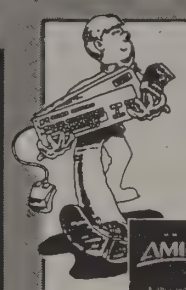

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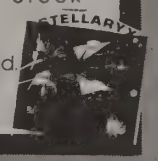

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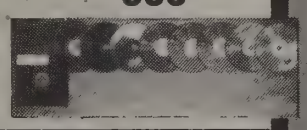

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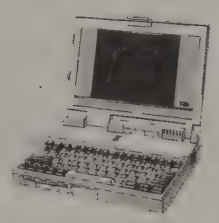

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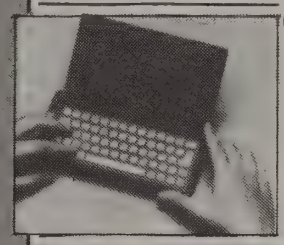

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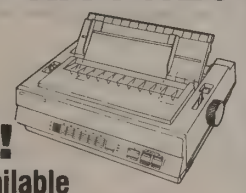

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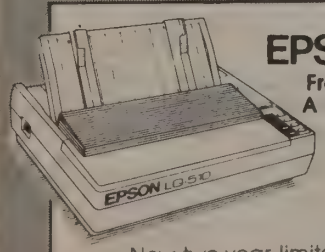

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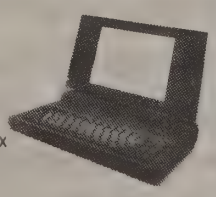

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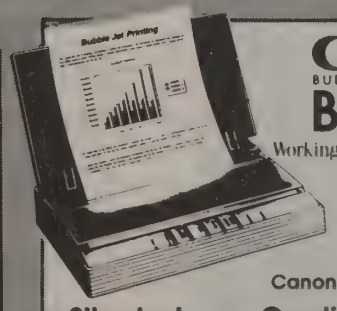

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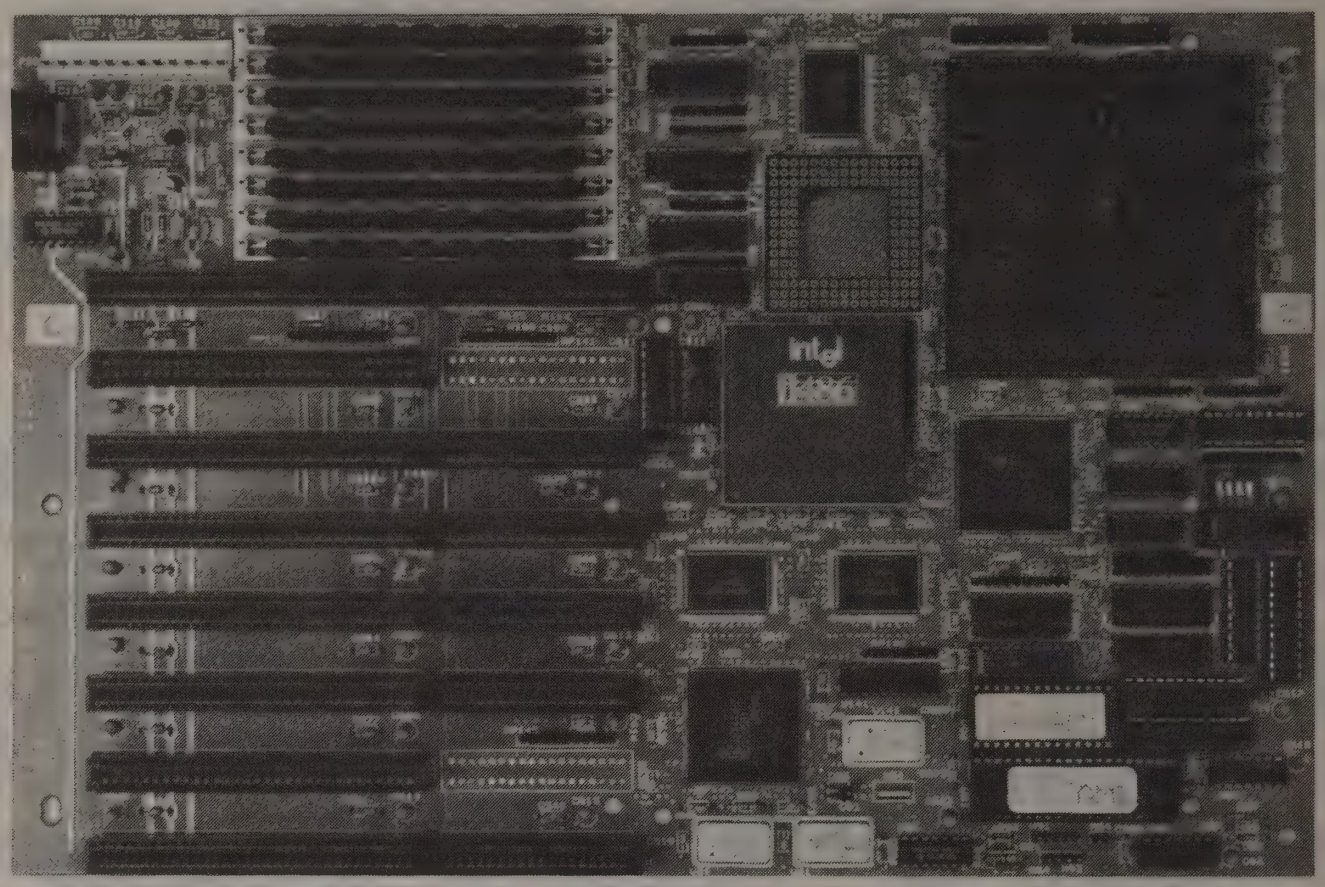

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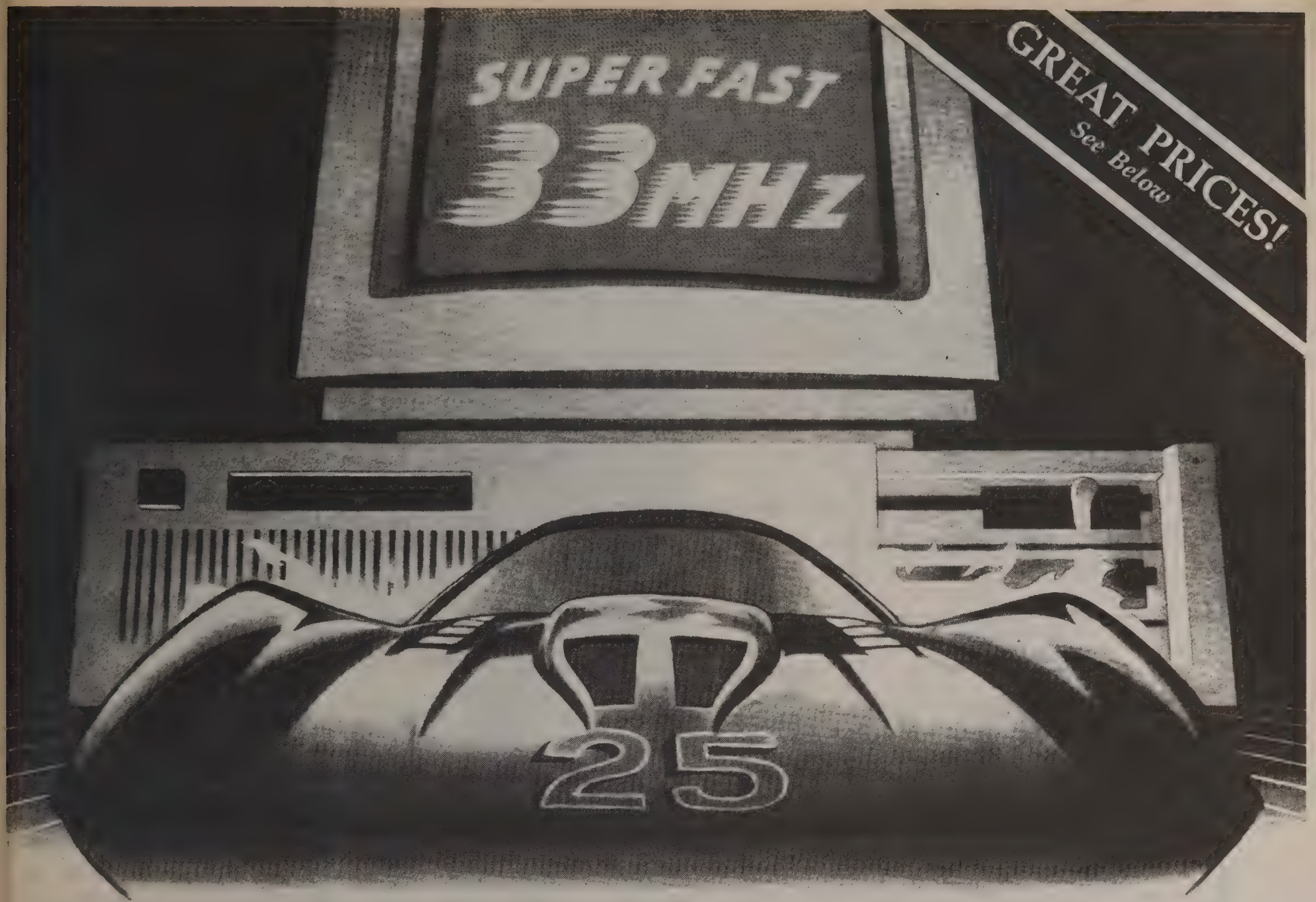

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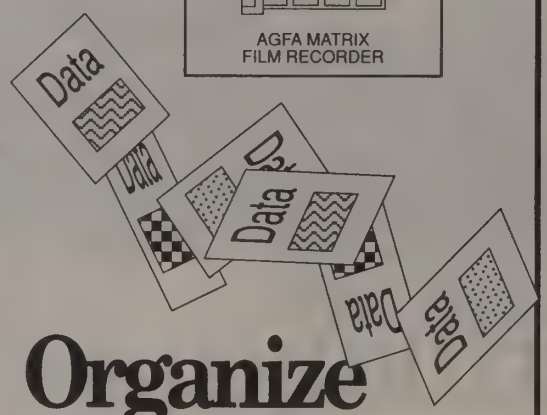

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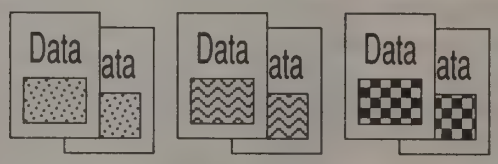

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Computer Of The Month:

The Micro Express LT5300

The Lyte Byte 5300 offers power, flexibility, and a great display.

Weighing in at seventeen pounds, the Lyte-Byte 5300 is the heaviest computer I've reviewed in this space, but it's also feature-filled and value-packed. With a list price of $2,395, it is almost in the price range of a desktop machine and offers lots of features that put it in honest-to-goodness competition with larger desktop units.

The computer is powered by an 80386SX central processor unit running at 16MHz. It comes with 1MB of RAM, expandable to 4MB at a cost of $100 per megabyte.

The most unusual aspect of this portable is that it has a wonderful gas plasma display. I usually don't like gas plasma displays, but this one is exceptional. It measures 10" diagonally and displays bright red letters on a black background. It offers VGA resolution, but is downwardly compatible. A brightness control on the side of the screen allows you to set the display to your taste; an intensity switch in the setup routines allows you to further modify the appearance of the display. An external VGA port allows you to use a color monitor of your choice.

The basic machine comes with an internal 1.44MB 3.5" floppy drive. Micro Express can provide you with an external 1.2MB 5.25" drive ($120) if you need it. The computer comes with a 40MB internal floppy drive, which can be upgraded to either an 80MB drive ($200 extra), 100MB drive ($300 extra) or a gigantic 200MB drive ($400 extra).

The keyboard is also a pleasure. It's laid out in a conventional manner; what sets it apart is the inclusion of an external numeric keypad that gives you full keyboard capabilities. If you're still dissatisfied, you can easily attach any external keyboard. While the external keyboard port is set up to accept OS/2 plugs, an adapter is included so you can use any AT keyboard as well. The designers of this machine had their act together.

Unlike most of the other portables with gas plasma displays, this machine is operable from a NiCd battery pack, included with the machine. A fully charged battery is supposed to last up to four hours, depending upon your use patterns. The battery pack will recharge in as little as two hours. This makes for a really usable battery system. If battery operation is not important to you, the machine is available without battery for $200 less.

This computer has a wide array of ports, including two serial and one parallel port. No internal modem is available, but there's a single slot which will take a short card for either an XT or AT. This allows you to easily fit the computer with either a modem or a network card.

A few final pluses are a soft carrying case and a 15-month warranty, as well as a 30-day money-back guarantee. If you're interested in a machine in this size and weight range, this is certainly one to consider. ■

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Handwriting Input In The Real World

GRiDPAD Goes Where Keyboards Can't

BY MICHAEL ROBIN

Although desktop and laptop computers have become standard pieces of equipment in the workplace, there are millions of people working in vertical markets—sales, market research, insurance claims and adjustment, service dispatch, delivery, etc.—who use pencil and paper as they stand or walk to record information and complete forms. For these people, a computer with a keyboard, no matter how small, is not practical.

Many people have dreamed of a computer that's as easy to carry around as a clipboard and as easy to use as a pencil and paper. For too long, the talk about pen-based, "people literate" computers has been just that—talk—until the GRiDPAD was introduced in 1989.

The GRiDPAD is a clipboard-sized computer designed for situations where the laptop is not a practical option. Rather than having a standard display screen and a keyboard, the GRiDPAD incorporates a single, 10", 640 x 400 pixel display, utilizing an electronic pen for data and command input. It is built around a 10MHz, 80C86 processor running MS-DOS v3.3. Usually equipped with LapLink III file-transfer software and an internal 2400 bps modem, GRiDPAD easily communicates with the desktop or mainframe computer back at the office. The GRiDPAD can run MS-DOS programs using a pop-up on-screen keyboard, or the serial ports for connections to a printer, keypad, or another PC.

Companies providing the GRiDPAD to non-technical people working in the field have achieved successful results. Bringing technology to new sectors of the population has not only made the entire process of information-gathering more efficient, but has facilitated better communication and higher accuracy. The experiences of territory managers for Kellogg, Inc., who survey stores to gather product information, and market research done by Research Data Analysis, Inc. help illustrate some of these benefits.

Collecting inventory information is now easier and quicker with the GRiDPAD.

KELLOGG MANAGES SKUS

"The obvious advantage of having the GRiDPAD is that it is interactive. At night, you plug your phone line in and you can interact back to New Jersey into the mainframe with all the information you have collected that day. Then anyone else in the company who wants to find out anything specific about a certain product, or how many stores have a particular product, can retrieve that from the mainframe from their own house."

—Steve Poppy, Kellogg Territorial Manager

Many consumer products are characterized by thin profit margins based on high unit sales volume. Profitability is determined by price, availability, and delivery.

To monitor and evaluate product success, companies conduct store surveys for a variety of factors, including shelf space, product positioning, inventory, and promotions. Traditionally, the findings are gathered using paper forms, and mailed back to company headquarters, where they are entered into the computer system, and tabulated to generate reports. This process takes several weeks.

Paper forms have advantages: most people are familiar with them; they are lightweight and relatively easy to transport. The disadvantages are the cost and time associated with printing, high error rates, illegible handwriting, difficult modification and delays associated with shipping. There is extra time and labor involved to keypunch the information and make the data usable.

Last year, cereal giant Kellogg began to equip territory managers—retail sales reps—with the GRiDPAD to save time and money. New products, for example, only have about ninety days to prove their worth to retailers; thus the key to success is a rapid turnaround of accurate information gathered in the field.

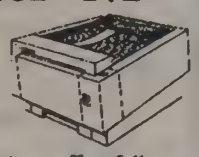
Prior to the GRiDPAD, territory managers carried blank forms as well as copies of completed forms as a reference to past records. Using the GRiDPAD, they now enter product information directly on site into a machine readable form. When they go home at night, they connect with corporate headquarters in New Jersey via modem, and send their information directly into the computers. They can also access past records online. Now reps no

Continued on page 194

Breakthrough in LaserPrinter Pricing!

Apple® Personal LaserWriter® NT

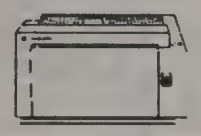
$2375



The Personal LaserWriter NT printer offers full PostScript® text and graphics all in a compact design. The printer has an AppleTalk™ Interface built-in providing networking capabilities and connectivity to any Macintosh computer. With its flexible paper handling it can print up to 4 pages per minute. Its the ideal printer for 1 to 3 users.

Apple® Personal LaserWriter® LS

Call for Pricing!



The Personal LaserWriter® LS printer is the most affordable Apple LaserWriter ever! Yet it creates crisp, professional documents, at a rate of up to four pages per minute. It also incorporates TrueType™, Apple's new font technology that lets you scale and print characters smoothly and precisely, from the smallest footnote to the largest headline.

Apple® LaserWriter® II

For PostScript® text and grapfhics, or networking requirements, get a LaserWriter IINT or IINTX. Both units produce 300 DPI output, print up to 8 pages per minute, and come standard with 2 megabytes of RAM. For the fastest performance, the LaserWriter II NTX has a built-in 68020 processor that prints up to four times faster then previous LaserWriter printers.

LaserWriter NT.....$3149
LaserWriter NTX.....$4199

Macintosh® Classic®

LIMITED QUANTITIES

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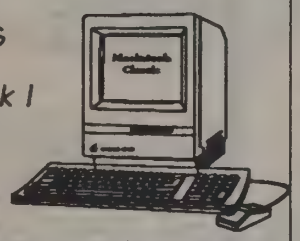


The Macintosh Classic is the ideal entry-level machine. It offers all of the most valued advantages associated with Macintosh, including ease of use, and the ability to run thousands of existing applications, all at an affordable price. The Macintosh Classic'S built-in capabilities allow it to be configured with an internal hard disk and you can expand its memory to 2MB.

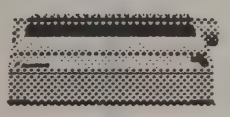
The all-in-one design of the Macintosh Classic 2/40 comes with 2 MB of RAM (expandable to 4MB), internal 40-megabyte hard disk drive, internal 1.4-megabyte Apple SuperDrive floppy disk drive, ADB keyboard and mouse, system software and training disk.

Apple® StyleWriter®

Call for Pricing!

The new Apple® StyleWriter® printer gives you crisp, laser-quality documents for about the cost of an ordinary dot matrix printer. The blacks are rich. The lines are precise. And, with a resolution of 360 dots per inch, it delivers the quality of printers costing thousands of dollars more. Its quiet. Its compact. Its convenient. And it incorporates TrueType®, Apples new font technology.

ImageWriter® II



The affordable dot-matrix printer works with any Macintosh computer and offers the flexibility of printing in color-with an optional color ribbon and appropriate software. Printer cable not included.

Now $419

Macintosh® LC

Limited Quantities Available

The Macintosh LC is the most affordable color Macintosh system. With a sleek, modular design, sound capabilities, and solid performance, the Macintosh LC is perfect for both the education and business environment. The Macintosh LC offers a range of features that make it an excellent entry-level system.

Macintosh® IIsi

Only $2639

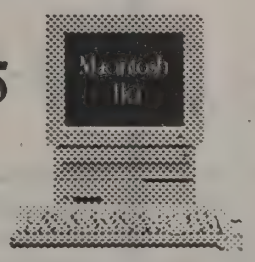
Now In Stock !

2mb RAM, 40MB HD

The new Macintosh IIsi is an excellent choice for business or educational use. With built-in cache for increased performance, the IIsi delivers serious number crunching. Rich color and built-in sound capabilities are a given with the IIsi. And because it has built-in video support, it will drive four different Apple monitors.

Macintosh® IIci

Only $4125
Save $1844



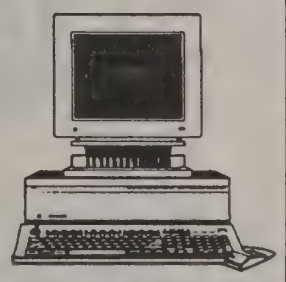
4 mb RAM, 1 FLOPPY DR

At 25 mhz, the processor in the Macintosh IIci speeds up performance and saves you time. The high-performance Macintosh IIci can run most applications 45 percent faster then the Macintosh IIcx (up to 75% faster with the optional RAM cache card). Built-in video support eliminates the need for a separate video card and frees an expansion slot for other uses.
Keyboard and monitor optional.

Macintosh® IIfx

Only $6279

Save $2690



4 mb RAM, 1 FLOPPY DR

Macintosh IIfx, the ultimate machine providing power and high-performance in an affordable package.

For maximum expandability the Macintosh IIfx comes with six expansion slots and is expandable to 8 mb of RAM.

The Macintosh IIfx is System 7.0 capable and an excellent choice for technical professionals. It also is an excellent platform for multimedia.

Monitor and keyboard optional.

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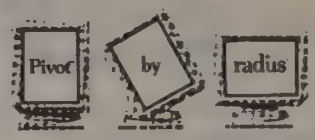
Products subject to availability.

THE Macintosh® SuperStore

COMPUTER SELECTION

The Radius Pivot™ Display



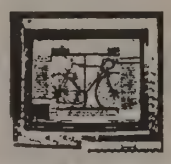
Only $1249

The Pivot™ Display changes orientation to match the format of your work. Use the full-page orientation for word-processing and switch to the landscape mode to work on your spreadsheets. 4 levels of gray standard, upgradeable to 16-levels. Available for the SE30 or the Macintosh II family. Video card included in above price

Radius TPD

Only $1295

*ncluding Video Card



TheRadius TPD has one of the largest active screen areas of any 19" monitor and at 1,152 x 882 pixels at 82dpi, it can display more data than some 21-inch monitors.

radius

QMS ColorScript 100 Model 10

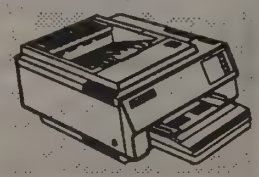
The ColorScript 100 uses a 68020 processor to produce the highest quality color graphics. This unit is the most inexpensive color printer on the market today! If you need color output, this is the unit for you!

Call for Pricing!

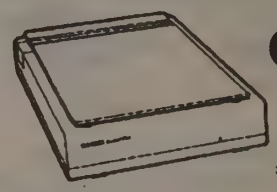
QMS PS-810

Only $2635

The PS-810 ia a true Adobe Postscript™ printer operating at 16Mhz, using the industry standard Canon engine. At 8 pages per minute, its also one of the faster printers on the market!



Abaton Scan 300



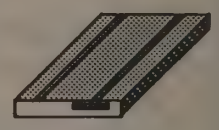
Only $1495

*incl. interface

Abaton's 300GS scanner is a high-quality gray-scale scanner. With the quality of far more expensive units and a price to fit in your budget, this is the unit for you!.

InterFax 24/96 Modem

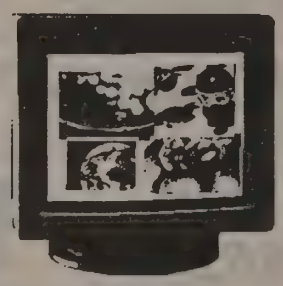
Only $349



The InterFax 24/96 modem is a 2400 baud modem and 9600 baud fax that has more features then some of the most expensive fax machine. A must for any office environment using Macintosh computers!

Abaton

RasterOps



Call for Pricing!

RasterOps new Flicker-Free 72 dpi WYSIWYG 24-bit graphics board and 19" Color Displays for the Macintosh II CPUs and the SE/30.

RasterOps new card , the Colorboard 364, can display live 24-bit video in a moveable, resizeable Mac window. Other features include frame grabbing at a 30th of a second, hardware pan, zoom and virtual desktop capabilities!

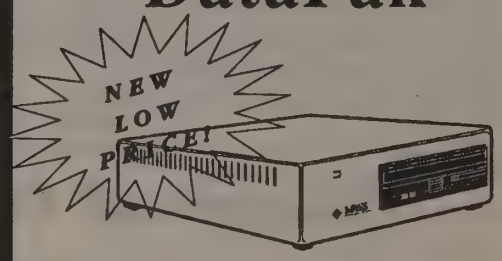
24L Color System
24-bit color, 19" trinitron

8L Color System
8-bit color, 19" trinitron

ClearVue GS System (for SE/30 or Mac II)
8-bit Gray Scale, 19" display

364 Video Card/ Frame Grabber

Mass Micro DataPak™



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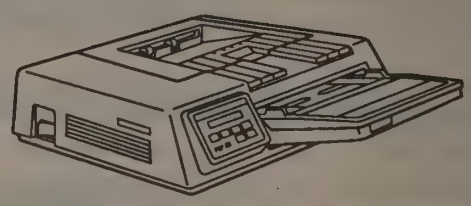
45 Megtabytes on a removeable cartridge. Justpop in another cartridge whenever you need more storage. With an access time of 25ms, the DataPak™ is faster than many hard drives. Complete with one cartridge, software for back-up, security and partitioning. Voted by industry experts as the best new storage system for the Macintosh!

MASS microsystems

GCC Personal Laser Printers



Now Under $1000

The GCC Personal LaserPrinter II is the lowest priced Macintosh laser printer ever. The PLP ™ II uses high-quality Bitstream® outline fonts, the same font technology you'll find in Postscript® printers costing twice as much. With edge to edge printing, and a compact footprint, this is the ideal unit for the individual user.

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the only printers you will ever need!!

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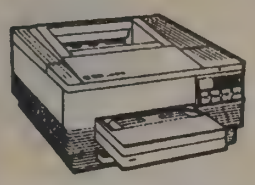

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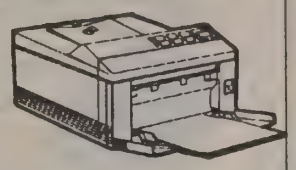

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- Most affordable HP LaserJet printer
- Wide range of HP LaserJet software and font support
- Fast, 4-ppm printing

Hewlett Packard® DeskJet 500

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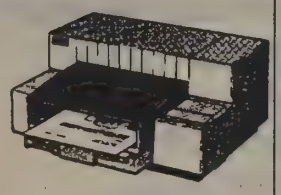

- Offers improved print quality
- Now with additional internal fonts
- Water resistent ink cartridges
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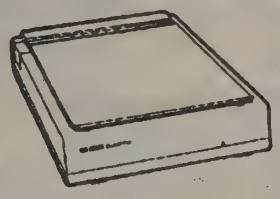

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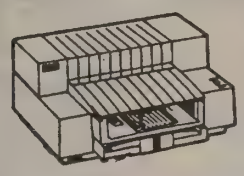

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- Voted #1 Database by Macintosh Users
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- Padded Cordura Construction
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Available for:
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QUANTUM	Capacity	External
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Trackball with two buttons for Macintosh Users. Available for: Mac Plus, Mac SE, and the Mac II family of Computers.

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Computer Selection 3.5" DS/DD Diskettes

- 10-pak with plastic carry case
- Lifetime warranty

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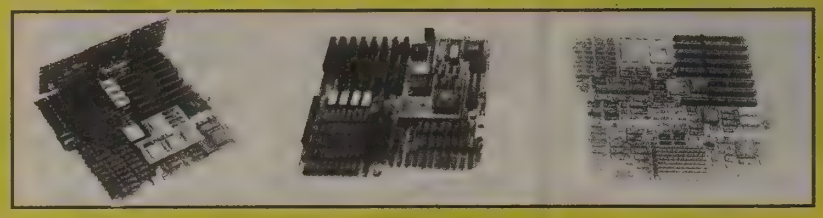
USM US MACH Presents the Ultimate 386SX Notebook

AMI High Performance Motherboards



386SX-16
AMI motherboards are extremely reliable and are designed to perform in any condition. They are tested at 130°F and feature a one year limited warranty.

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To improve reliability and minimize noise we use 8 layer PC board construction. Not the common 4 or 6 layer you see elsewhere. One look shows.

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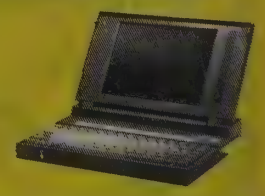
This board is convertible to a Mark II 486 by simply plugging in a 486 mark III Adapter into the CPU slot! You can increase performance when your needs increase.

MK IV 386-33
The Screamer 64/256K Writeback Cache
The Fastest 386-33 in the World.
At AMI quality is a passion. All products go through extensive burn-in and other tests to meet the highest quality standards.

VOYAGER 486-24/33 MHz
The Voyager features the latest in state-of-the-art 486 technology, at a price that offers the biggest bang for your buck.

EISA 486-25/33 Enterprise
The Enterprise uses the AMI EISA BIOS with built-in set up and diagnostics and supports all the new EISA features. The Enterprise is well suited for popular applications relating to CAD, CAM, networking, multiuser and multitasking functions.

The New US MACH Notebook
The Ultimate Notebook Machine



- 386SX-16 MHz CPU
- 20 MB Conner Internal Drive
- Backlit VGA display with high contrast LCD and 16 gray levels
- 2 MB RAM exp. to 6 MB
- 6.3 lbs. w/battery
- NiCad battery and charger included

$1995

SX-16 Notebook, 20 MB Hard Disk	$1995
40 MB Hard Disk	2245
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40 MB Hard Disk	2495

The Micronics Mport 325 Portable

- 386DX-25 MHz 32K Cache
- 4 MB RAM expandable to 8 MB
- 40 MB 25ms Hard Disk
- 640x480 VGA monochrome LCD display
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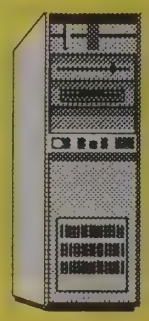

AMI 386SX-16
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- Minitower/Desktop Case
- IDE Hard Drive Controller
- 2 Serial/1 Parallel
- 1.2 or 1.44 Floppy Drive

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SAME CONFIGURATION AS ABOVE

AMI 386SX-20	$975
AMI Mk III 386-25	1375
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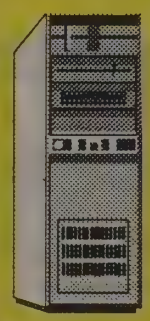
AMI 486-25/33	SPECIAL



MICRONICS 386-25 BMP
- 1 MB expandable to 8 MB
- Minitower/Desktop Case
- IDE Hard Drive Controller
- 2 Serial/1 Parallel
- 1.2 or 1.44 Floppy Drive

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SAME CONFIGURATION AS ABOVE

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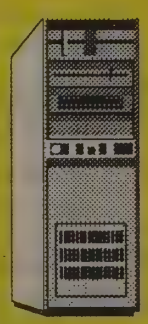

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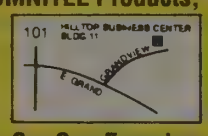

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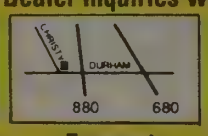

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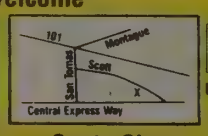

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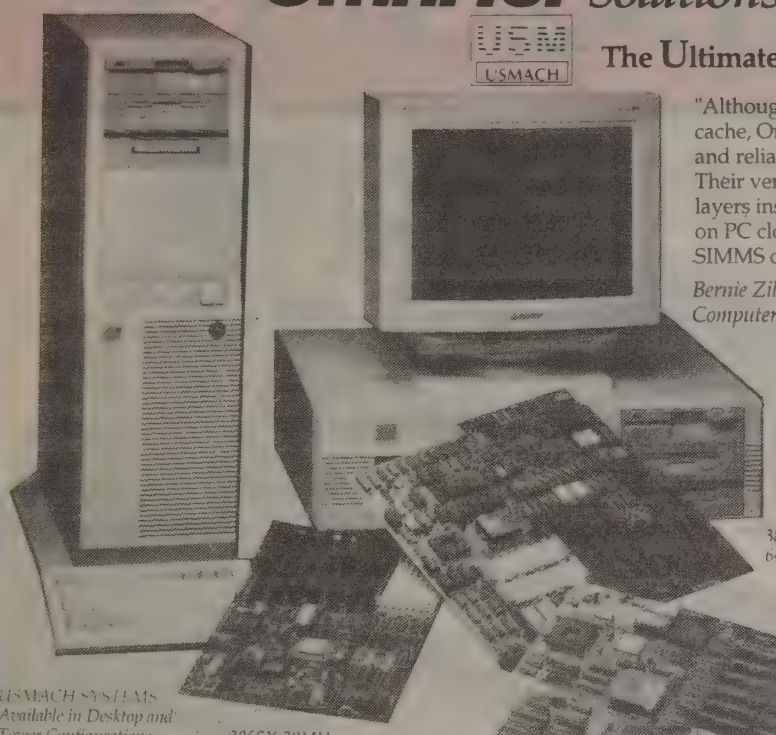

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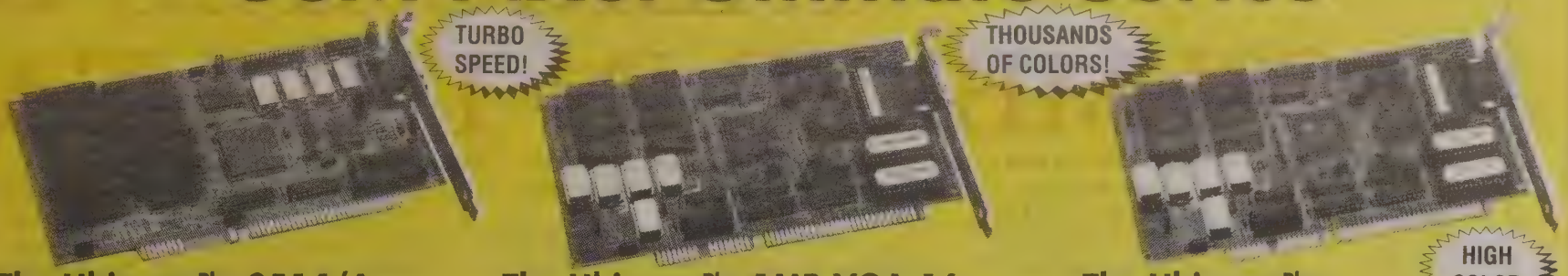

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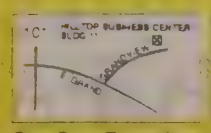

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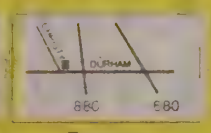

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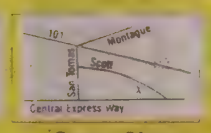

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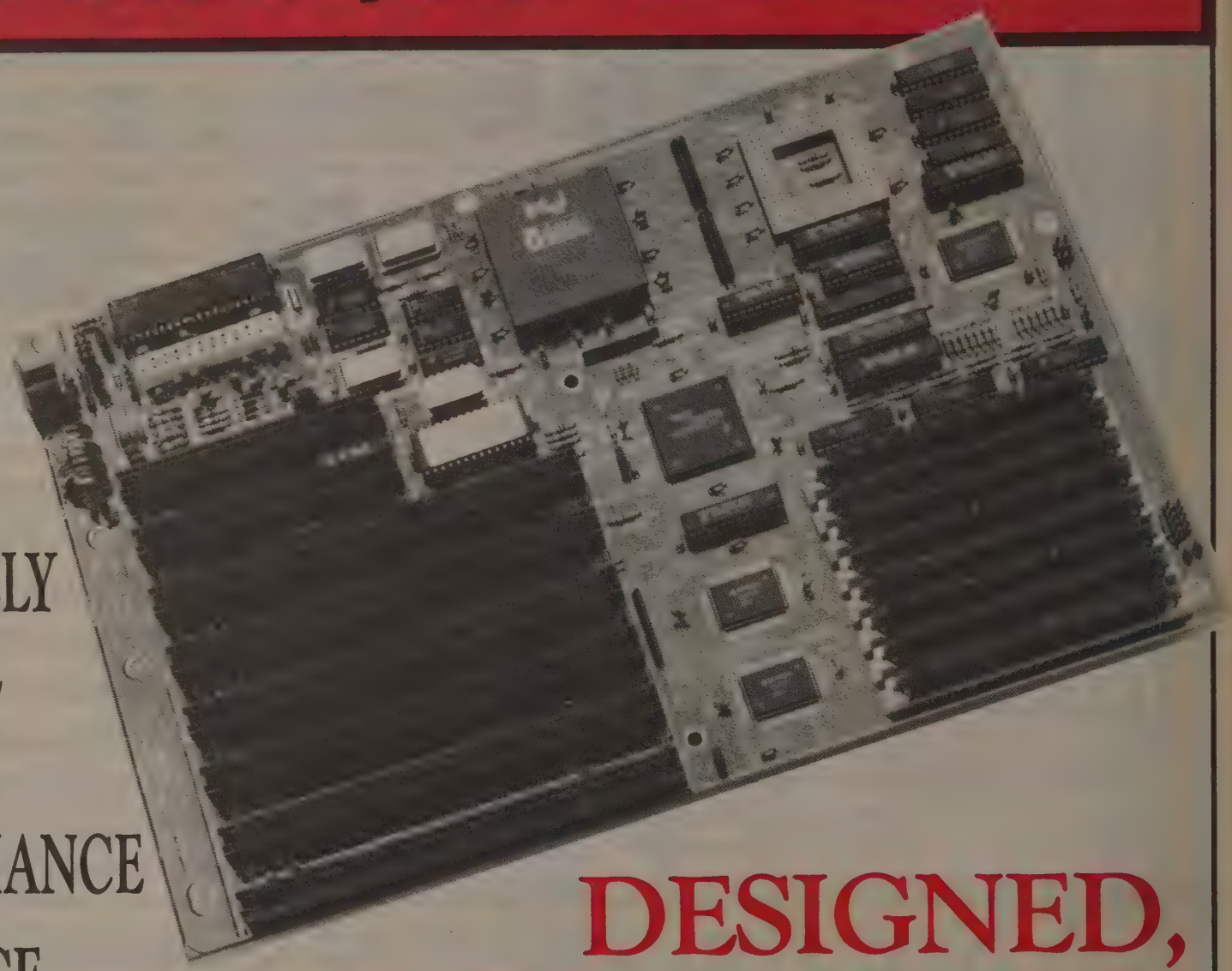

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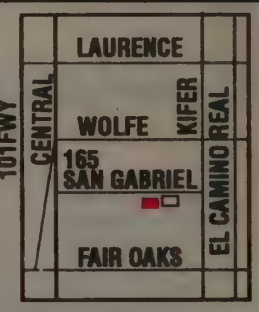

PageMaker On A Network

Plus: Better Switches And Other Useful Devices

BY WAYNE A. YACCO

I'm going to begin this column by updating a couple of recent items.

LAN READY PUBLISHING FROM ALDUS

First on the list is a development in desktop publishing that relates to the column I wrote just after the Seybold Electronic Publishing Conference in San Jose last year. Faithful readers will recall that the principal difference between desktop publishing and traditional prepress systems was defined in terms of support for cooperative processing.

Aldus has taken a small step (small for the publishing business, large for PageMaker) in the right direction with the introduction of PageMaker 4.0 for Windows. The program is network ready from the get-go. Add a box full of licenses, and everyone can start sharing a single copy of the software on a publishing server. OK, that's just file locking, but there's more. Aldus has built in some very sophisticated import and hot-linking features.

LOCAL AREA NETWORKS

A built-in Link Manager can maintain a connection to all file imports including text, charts, and art—over a network. Charts can be imported from Excel, for example, and while document composition proceeds, a second workstation can be used to continue development of the charts. They are then automatically updated in the publication. That's pretty damn cooperative! The same applies to text or database files.

There are other tricks as well. If you import from an XLC file, PageMaker transparently opens Excel to create the chart. And there's support for plenty of applications, including Lotus 1-2-3 and Ashton-Tate's dBASE (or file-compatible xBASE products). Links also work with data imported into the program's new table editor.

Aldus has taken the first steps toward reinventing the proprietary publishing system. What's still missing is work-flow management and production tracking. Third-party developers could pick up the ball in this area—building on what Aldus has started—just as Managing Editor has developed Page Director as a Quark Extension on the Mac.

There are lots of other new features in the Windows version of PageMaker besides networking, even—at least for now—more than in the Mac version. It's still relatively easy to use, and the longer I work with it, the more I like it.

Copyright ' 1991 by Wayne A. Yacco. All rights reserved. *An editor, writer, and consultant specializing in microcomputers and their business applications, Wayne Yacco writes articles, columns, and reviews for many trade and business publications. He can be reached at Box 269, Burbank, CA 91503.*

TURNED ON

Some time back I suggested the possibility of using combination keyboard-monitor switches for convenient testing of several systems at a single test station. Unfortunately, the only switch of that type that I was able to find didn't quite work. It tended to hang up the keyboard. I subsequently discovered the cause of the problem and redesigned the switch so it would work. I planned to provide the simple instructions here as well as details of a high-end electronic switch that would elegantly do the job for right around $1,200.

Fortunately, that's no longer necessary. Roger Specialist has a new shipment of switches that work perfectly, and also correct a second, and more troubling, problem with the older switch. The ABCD models are now available for 15-pin VGA video as well. Small network installations are a fresh breeze. Furthermore, I occasionally find it necessary to work with several machines at a time—even with Windows on every machine. This new switch does the trick there too, and it costs about $1,175 less than the sophisticated electronic version.

If you have trouble locating switches or any of the parts needed to make connections, just about anything can be obtained from Roger Specialist. It is a good source of many hard-to-find switches, connectors, and cables of all types.

RESOURCE SHARING WITHOUT A NET

This column always presumes one thing about the solutions it suggests: a network. However, there are situations where you shouldn't use a full-blown network to achieve a simple goal—remote printer access, or sharing, for example. ASP Computer Products offers several solutions for printer sharing and remote access that are both inexpensive and simple to install and use.

The simplest of these is LongLine. It consists of a transmitter that attaches to the computer's parallel port and a receiver for the Centronics port on the printer. Instead of the twenty-foot limit of a parallel cable, you can easily go fifty feet over flat modular telephone cable. There is also provision for additional external power to both receiver and transmitter.

If you want a similar solution for hooking up to sixteen computers to a printer, ASP offers SNAP, which is similar to LongLine with the addition of an extra RJ-11 port on the transmitters. The extra port lets you daisy-chain computers. SNAP handles up to 1,200 feet of modular cable. Two-way and three-way couplers let you design a variety of configurations. Both SNAP and LongLine cost about $50 for each transmitter and $55 for a receiver.

ASP offers alternatives in the $700-$1,000 range that connect multiple computers and printers. Maestro models connect up to ten computers to two printers and provide up to 1MB of buffering for simultaneous document transmission. ServerJet offers similar capacities, but plugs right into an HP LaserJet's Optional I/O slot. ■

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The Largest Imaginable File

Baba Reboot Explains Inode And Other Delights

BY BENNETT FALK

Our friend Hapless User, having jumped through the requisite number of hoops, recently set up his independent UNIX consulting practice from the spare window of a falafel cart on Sproul Plaza. These days he shaves his head, calls himself Baba Reboot, and tirelessly repeats a mantra to dispel confusion: "Ganoush is not UNIX".

Amid queries about obscure command line arguments for "who", "ls", and "cat", Baba Reboot occasionally fields an interesting question. The question he showed me was scrawled with a blunt pencil in a childish hand on a piece of yellow paper from a Big Chief tablet and wrapped around a rock: **Is there a maximum file size in UNIX? Why?**

INODES AND DISK BLOCKS

"Trick question," Baba said. "The superficial answer has to do with inodes and disk blocks. You know inodes?"

"Refresh my memory."

Baba Reboot sighed heavily and ran his fingers through the stubble on the top of his head.

UNIX

"Well, you really ought to read one of those books about UNIX like *The Design of the UNIX Operating System* by Maurice J. Bach, Prentice Hall. But the short version goes like this.

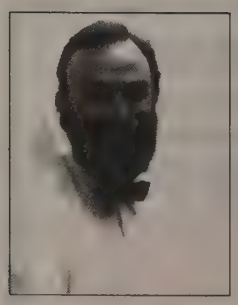
"An inode is an administrative structure maintained by UNIX that contains information about a file. The inode has fields for owner, permissions, file type, access times, file size, and of course, addresses where the contents of the file can be found.

"Now the addresses in the inode that point to a file's data are just disk block numbers. Disk blocks are commonly one kilobyte (1024 bytes). If you know how many disk blocks an inode can point to, you can calculate the maximum file size on a UNIX system."

"Oh."

"'Oh,' indeed. Each inode has space for thirteen disk block addresses."

"But wait—if each inode can point to thirteen disk blocks and if a block is 1K, then the maximum file size is only 13K. That can't be right."



Copyright © 1991 by Bennett Falk. All rights reserved. *Bennett Falk lives in the Bay Area, writes when he can, and hopes for the best. He works for Sybase, but the opinions and attitudes expressed are his own.*

"Very true, that cannot be right," Baba Reboot replied smugly. "In an inode, only the first ten addresses point to disk blocks that contain a file's data, so the inode can point directly to as much as 10K worth of data. The eleventh address doesn't point directly to the file's data. It points instead to a disk block that contains more addresses. Each address takes four bytes, so a 1K disk block can hold up to 256 addresses of disk blocks that hold data. The entry in an inode that points to a disk block of addresses that in turn point to a file's contents is called a 'single indirect' address. This address controls up to 256K of a file's contents.

"The twelfth inode address is doubly indirect: the inode points to a disk block with 256 addresses, each of which points to a single indirect block. The double indirect address in the inode can address up to sixty-four megabytes of a data in a file.

"Finally, the thirteenth inode address is triply indirect: the inode points to a disk block with the addresses of up to 256 double indirect blocks. The triple indirect block can address up to sixteen gigabytes of data in a file."

"So the maximum file size in UNIX is 10K plus 256K plus 64MB 16GB. Wow."

"Don't get excited. After all, it is a trick question."

"What do you mean?"

"Well, an inode can point to a little more than sixteen gigabytes of data in a single file, but the inode has a field to record file size and that's basically a 32-bit field. The largest number you can record in a 32-bit field is only four gigabytes."

"Ah."

"In fact, it gets worse. The standard means of accessing files in a program are the system calls 'open,' 'close,' 'read,' 'write,' and 'lseek.' lseek is particularly interesting since it allows you to specify where in a file the next read or write operation will take place."

Baba Reboot hastily scribbled out a small C program illustrating the use of these calls. A listing of the program appears in Fig. 1.

"This program can be used to exercise these system calls. You specify a file (or a device), a number of blocks to be written, and the offset into the file or device where the writing should begin. I've arbitrarily made the block size 1024 bytes, but you could make it any size that's convenient.

"The standard means of accessing files in a program are the system calls 'open,' 'close,' 'read,' 'write' and 'lseek.' lseek is particularly interesting since it allows you to specify where in a file the next read or write operation will take place."

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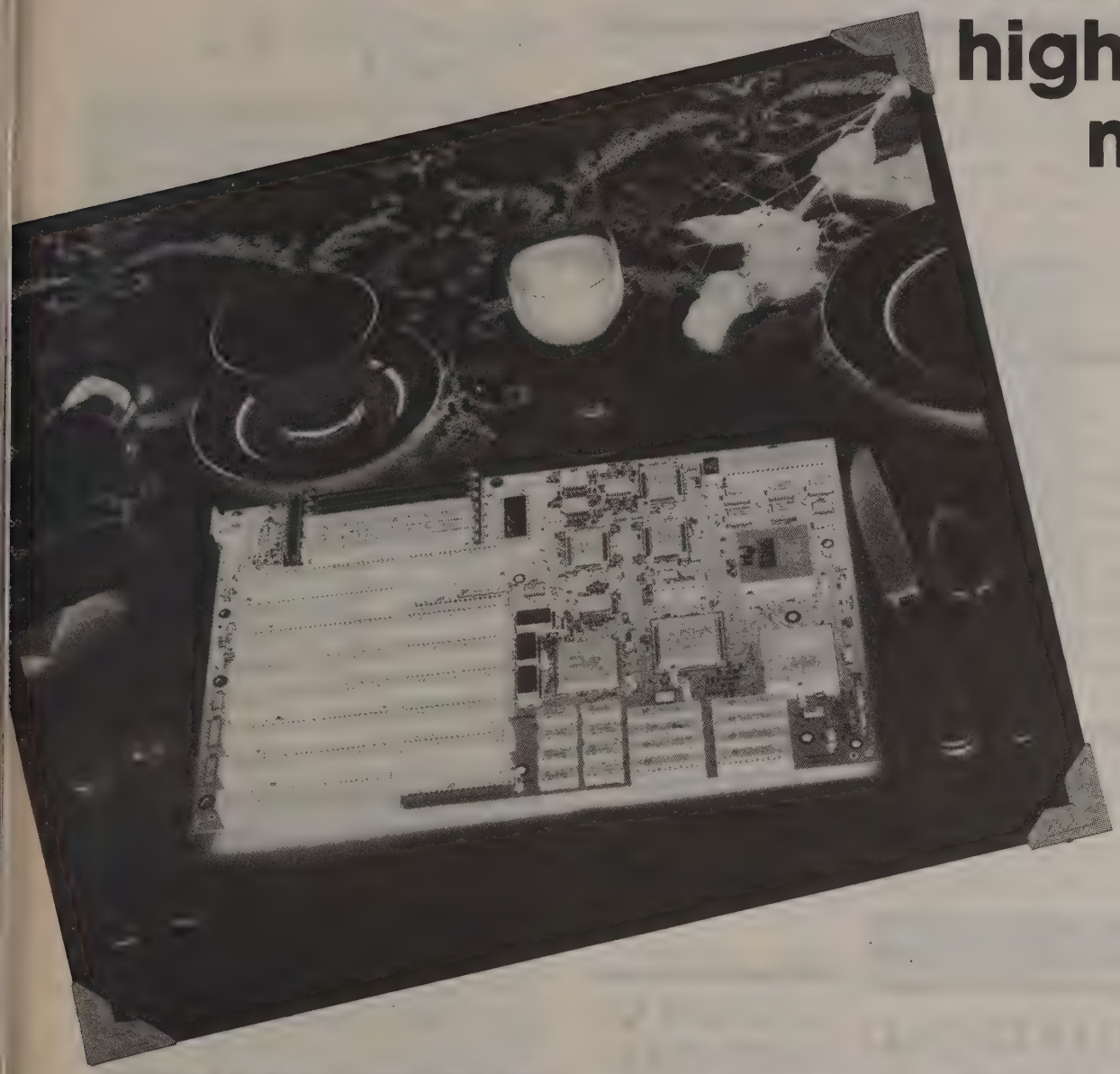

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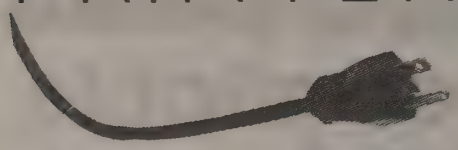

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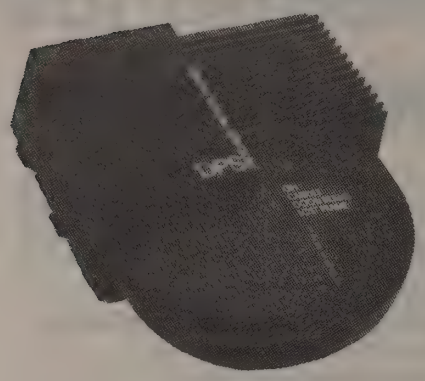

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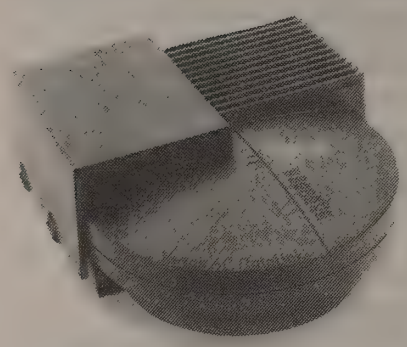

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"The program opens the specified file, seeks to the given offset, and loops through calls to 'write' until it has written all the blocks you asked it to write or until the write fails."

PITFALLS

"There are a couple of pitfalls. You see, lseek takes three arguments: a file descriptor, an offset, and a flag that tells how the offset is to be interpreted. The offset is a long, that is, 32-bit integer.

"In the best of all possible worlds, that number could be as large as four gigabytes. However, the largest offset lseek will accept without error is 2147483647, which happens to be the two-gigabyte boundary. If you try to specify 2147483648, lseek fails. Apparently, the 'offset' argument to lseek is taken to be a signed integer, which makes its maximum value two gigabytes. Values beyond the two-gigabyte boundary are expressed as negative numbers, and these are invalid arguments for the lseek, read, and write system calls."

"Can we talk a little bit about these numbers?

"Sure."

"Why is the number of bytes in a gigabyte so weird?"

"I don't see anything weird about 1073741824. It's a power of 2, you know."

"Well, ah, no, I didn't know. I thought a megabyte was a million bytes."

"No, no, no, no. The number of bytes in a megabyte is 1024 times 1024, or 1048576. A gigabyte is that number multiplied by 1024 again or 1073741824 bytes. Forget this silly fixation that everything has to end in zeros, or at least work this stuff out in hexadecimal."

"Uh, okay. What about other pitfalls?"

"The test program uses /dev/null as the default device, and that's fine for lseek, but it won't work for testing read and write: reads and writes to /dev/null virtually always succeed. If you want to test the limits of the read or write system calls, you need either a very large disk or a very high volume tape drive that you can treat like a file."

"I see.

"So the maximum file size is really limited by what the system calls can handle, and that's about two gigabytes?"

"Yup, that's about it."

"Do people really need files that large?"

"You'd be surprised." He wrapped the yellow paper around the rock and tossed it out the window without looking. "You hungry? How about a knish?" ■

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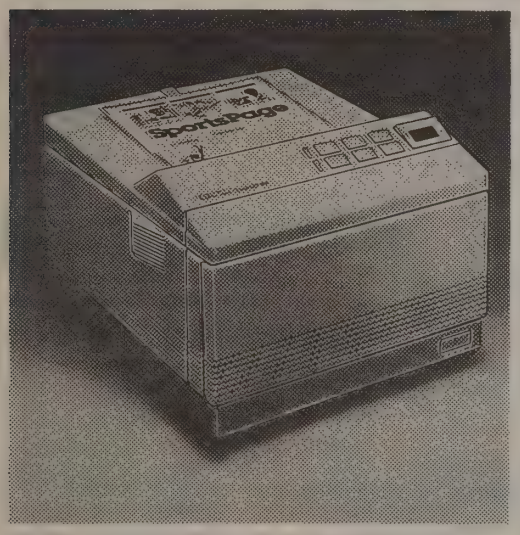

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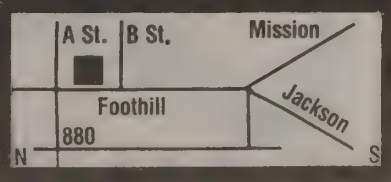

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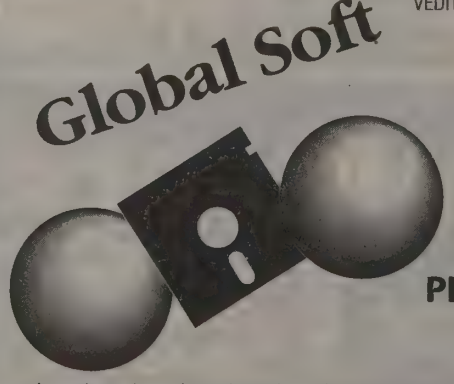

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FIGURE 1:

```
/* test.c:
     compile with cc -o test test.c
   run with  test -n  # -o # -d devicename

          -n #     the number of 2K blocks to write
          -o #     the offset at which to begin writing
          -d       devicename the name of the device or file to write to.

   /dev/null will be used for the device if none is specified.
  if the -n or -o flags are omitted, the default is 1 block.
*/

#include <sys/types.h>
#include <sys/file.h>
#include <fcntl.h>
#include <stdio.h>
#include <strings.h>

main(argc,argv)
int     argc;
char    *argv[];
{


extern int optind;
extern char *optarg;

int             file_desc;
int             len;
int             count;
int             i;
int             dflag;
unsigned long   n;
unsigned long   o;
char            c;
char            file_name[30];
char            cp[1024];


        while ((c = getopt(argc, argv, "o:n:d:")) != EOF)
          switch (c) {
          case 'd':
                strcpy(file_name, optarg);
              dflag++;
              break;
          case 'n':
              n = atol(optarg);
              break;
          case 'o':
              o = atol(optarg);
              break;

        }
if (dflag == 0)
          strcpy(file_name, "/dev/null");

  printf("Using %s\n", file_name);
```

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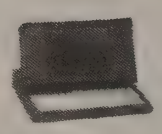

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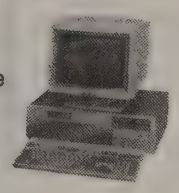

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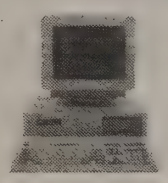

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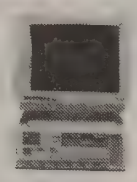

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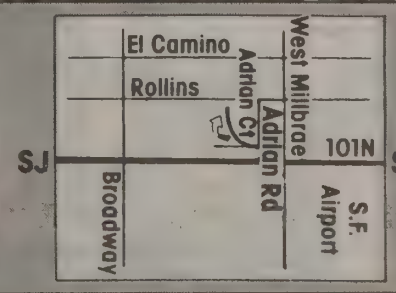

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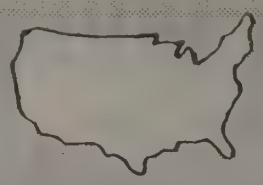

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```
if (n == 0)
        n = 1;
  printf("%ld blocks to write.\n", n);

if (o == 0)
        o = 1;

  printf("setting offset to %ld\n", o);


  count = 1024; /* byte count for buffer we want to write */
i = 0;

/*
  ** Open the file or device.
*/
  if ((file_desc = open(file_name, O_RDWR | O_CREAT, 0666)) < 0)
{
        printf("open failed on %s\n", file_name);

     return -1;
}

   /* Initialize a buffer to write to the named file. */
  for (i = 0; i < count; i++)
       strcat(cp, "A");

        /*
         ** Move the file pointer to the specified offset.
      */

        if (lseek(file_desc, (unsigned long) o, L_SET) < 0)
     {
             printf("lseek %ld failed \n", o);

             if (close(file_desc) < 0)
                     printf("close failed on %s\n", file_name);

          return -1;
     }

        printf("Starting to write\n");

    for (i = 0; i < n; i++)
    {
       /*
            ** Write a buffer to the specified offset.
        */
          if ((len = write( (int) file_desc, cp, ( unsigned int) count)) < 0)
       {
            printf("write failed \n" );
            printf("%ld blocks out of %ld written\n", i, n);
         return -1;
       }
    }

}
/* End of test.c */
```

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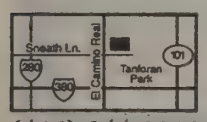

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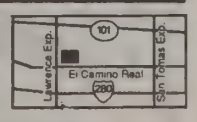

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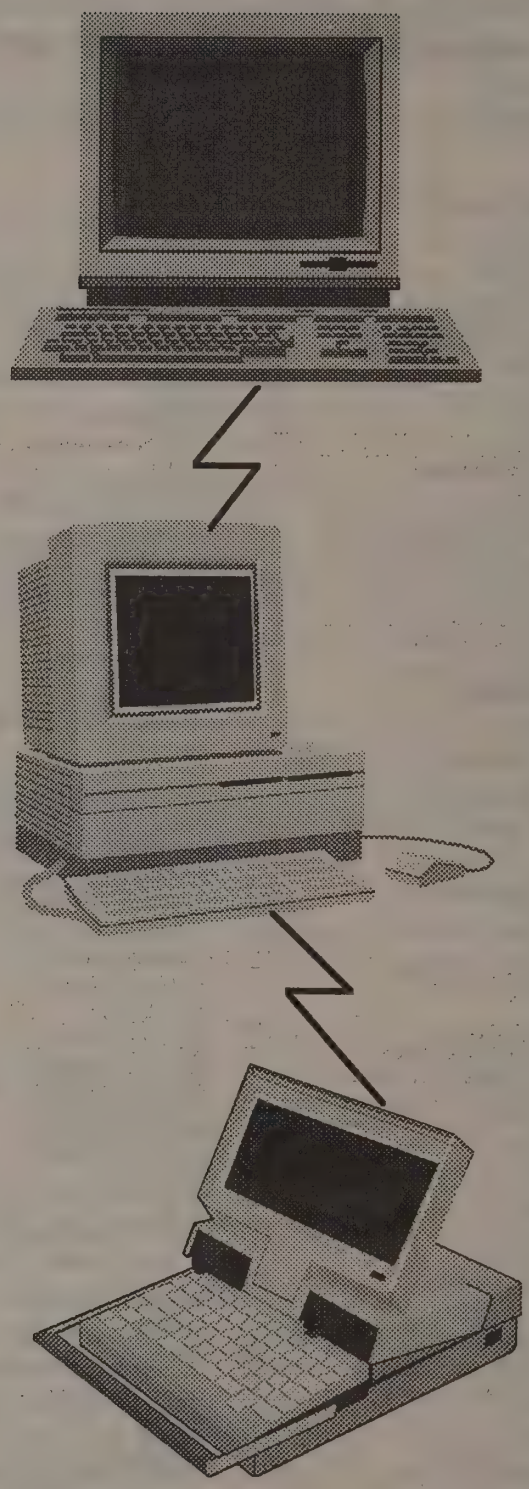

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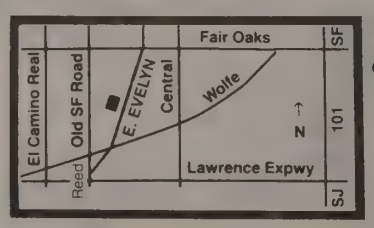

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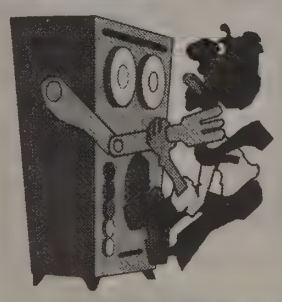

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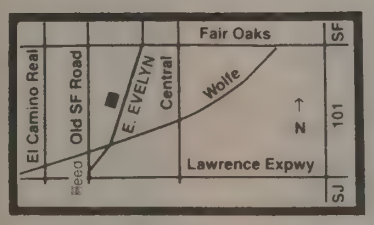

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The Pen: Mightier Than The Keyboard?

GO Reinvents Computing For The Mobile Professional

Software warriors on a Mission From GO: Bill Campbell, Jerry Kaplan, and Robert Carr

Let it never be said that GO Corporation hasn't set itself an ambitious course.

Founded in 1987, the Foster City company's been the focus of tantalizing rumors and very little un-nondisclosed information until quite recently. On January 22, co-founder Robert Carr showed the world what they'd been working on: an operating system called PenPoint, built from the ground up for a radically new computing environment—handwritten input.

The notion of handwriting-based computing is not itself new—notebook-sized computers (often with cramp-inducing keyboards) certainly suggest the desirability of a computer you could actually use like a notebook. Hardware and software vendors have become increasingly concerned with the needs of the "mobile professional," for whom portability is a must and the keyboard-based interface an obstacle. GRiD, a pioneer in portable computing, started shipping the MS-DOS-based GRiDPAD in 1989, and the tablet-like machine has been well accepted in vertical markets (see Business Solutions story this issue). More recently, Microsoft chairman Bill Gates announced that the Windows environment would support pen-based input and exhorted developers to include PenWindows extensions in their Windows products.

GO's founders, S. Jerrold Kaplan and Robert Carr, took a somewhat different view of the matter. Their experience in integrated software design (Carr as co-author of Ashton-Tate's Framework and Kaplan as co-author of Lotus Agenda) suggested that while connectivity with existing standards was vital, the best environment for pen-based computing was one designed specifically for that purpose. Hence, PenPoint.

However, building a new operating environment isn't just a formidable technical challenge. For GO to succeed, particularly against an entrenched competitor like Microsoft, it needs alliances with hardware and software vendors to establish itself as a standard. At the January announcement, the company appeared to have made a good start—in addi-

BY MARY EISENHART • PHOTOS BY SUSANA MILLMAN

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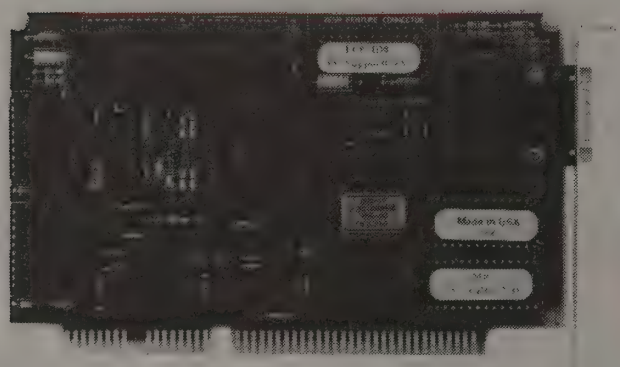

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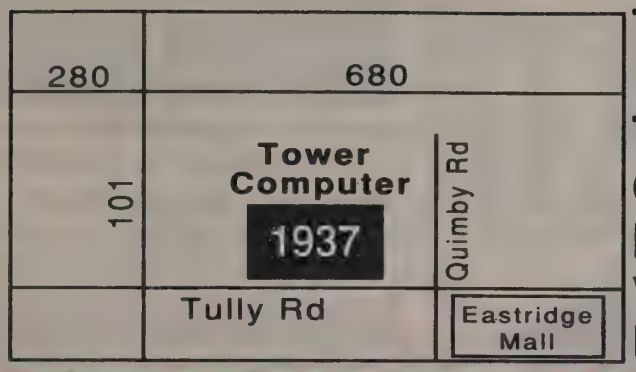

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Math coprocessor socket	Math coprocessor socket	Math coprocessor socket	Math coprocessor socket	Math coprocessor socket
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tion to a healthy variety of startups and vertical market developers, GO had the support of such heavy hitters as IBM, Apple, Borland, Novell, Claris, Sitka/TOPS, WordPerfect—and GRiD. PenPoint developer software is currently available, along with a prototype 386-based machine; it's expected that the first commercial products will be ready in about a year.

As Kaplan and Carr chart GO's technical course, the task of building the company has fallen to new president and CEO Bill Campbell, late of Claris. Campbell, a football coach earlier in life, is no stranger either to fervor and zeal or to making new endeavors succeed—he spearheaded Apple's sales and marketing from 1984 to 1987, the early years of Macintosh. Then, as Claris employees told the tale in their affectionate open letter of farewell in the Wall Street Journal, "when Apple decided to get out of the software business, you volunteered to start a spin-off company. You began with a handful of nearly-free Apple software products, a few rebels, a name, 'Claris,' and built us into the world's leading Mac software company."

Will this intrepid little software company succeed in changing the world, or at least the way people compute? It's too soon to tell in this highly unpredictable industry, but GO seems to be off to a promising start.

THE VISION

Jerry Kaplan

Co-founder and Chairman

What led you to found GO?

Around '87 I was completing work on Agenda, and I was talking with Mitch Kapor. We thought about what the limitations were to the use of Agenda as a personal information manager.

The key impediment, of course, was that it was tied to the desktop; at that time the smallest portables were fifteen pounds or something. Even if they could be very small and light, as today they are, they really weren't suitable for use while you were engaged in your normal course of business, face to face with others.

Fundamentally, desktop software is designed for knowledge workers, who do their work at a desk, with the door closed, without people around, where they can concentrate their full attention on the machine. Laptops are portable desktop machines, but do not serve the needs of mobile professionals, who spend their time face to face with others, and who would like to be able to use a computer in the course of doing their business.

What kinds of people?

Salespeople, consultants, lawyers, managers, executives. And another group of people, those that literally are standing up and moving around, like an inspector, or a policeman, or a delivery person. None of those can use a keyboard-oriented machine, because flipping up a screen and starting to type is just socially unacceptable and disruptive of that interpersonal fabric.

Not to mention the fact that using a mouse on a portable is an awkward thing to do.

The idea of a machine operated with a pen came up. I realized that if you could do handwriting translation so you could write directly onto the screen, have the software translate that to its ASCII equivalent, that you would really open up the use of computers to a completely new group of people, who presently can't use the computer in the course of doing their work. So we began to define a machine which would combine the social characteristics of a notebook with the power of a computer.

"If you could write directly onto the screen, have the software translate that to its ASCII equivalent, you would open up the use of computers to a completely new group of people, who presently can't use the computer in the course of doing their work."

We rapidly began to realize that existing software, which is designed for desktops and keyboards and the full attention of the user, would not be a good basis for a pen-based machine. You needed a system that was designed for lightweight, portable computers, that did not require the user's full attention. That had a very simple, direct, immediate user interface that's made possible by the pen, where you can manipulate things directly rather than having the indirection of a keyboard and a mouse.

As we began to see the more technical issues, it became clear that a new software substrate, an operating system, was justified in order to allow the system to deliver the unique benefits of a pen-based system, because the ultimate promise of a pen-based system is simplicity. It's the ability to manipulate that information with, from a user standpoint, a simple, compelling model, and use direct manipulation. That's what PenPoint has been designed to deliver.

So we began the company in '87 to develop that vision, and have now released PenPoint. Fundamental to understanding what pen-based computing is about is to recognize that pen-based computers are a different class of computing device, and that trying to establish a single binary-compatible standard on desktop machines and portable machines compromises severely the utility and simplicity of the pen-based system, and the character of the portable device.

Does that relate to the GRiDPAD, and to Microsoft's PenWindows? Because Bill Gates is saying, "Oh, we're going to do pen-based too, and you can run all your Windows apps on it." It seems that your vision is somewhat different.

Yes. I think very much so. The fundamental issue is, is it more of the same, or is it something new and different? You don't make a motorcycle by taking a car, removing two wheels, and trying to rebalance it. I believe that you redesign it to deliver the unique benefits that a motorcycle can provide.

The same is true of pen-based computing. PenWindows is an attempt by Microsoft to extend the reach of their desktop systems to grab a portion of this emerging pen-based market. Now I don't mean to suggest that there's anything wrong with that; I think that there's utility to a pen when it's attached to a desktop system. However, it makes that system more complex, not simpler. First you learn about, in their case, Windows. And the mouse and keyboard. And once you've mastered that, then you learn how a pen can be used as a layer on top to accelerate those operations. The software, of course, is designed for keyboards, so it doesn't naturally accommodate, for example, space that you might wish to open up to handwrite some information.

So fundamentally, Microsoft is a desktop operating system company, and is attempting to take a single system, Windows, and stretch it to compete on the high end with UNIX workstations and on the low end with small portable pen-based computers. And inevitably there are significant compromises that arise as a result of that.

Our vision is of pen-based computers as a new and separate category, which communicates with the rest of the computing world; it is network aware and is able to interchange data in standard formats with all different kinds of machines, but that fundamentally is designed to exhibit the unique characteristics of the pen for the user.

Key to the design of PenPoint is the detachable

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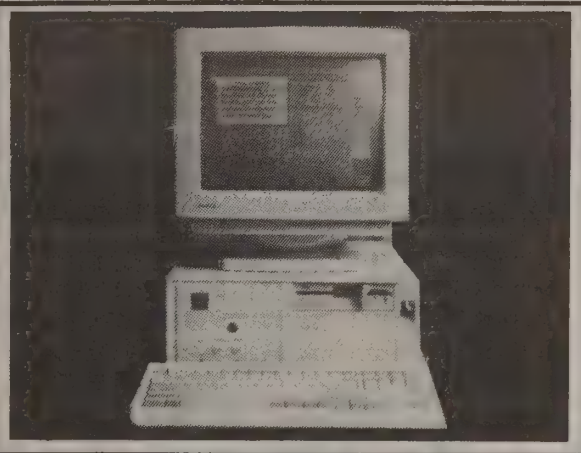

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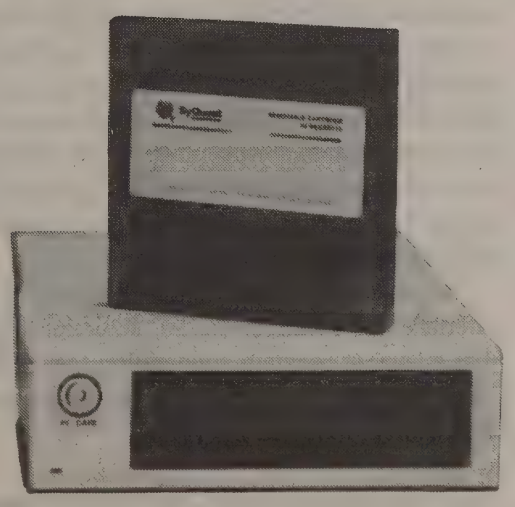

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networking structure. Unlike a desktop machine, which is perpetually plugged in—you boot it up and it's there and talking to whatever networks or servers are connected to it—a portable pen-based computer may come in and out of range of one or many different types of networking systems in the course of its use in a day. PenPoint has been designed with this kind of detachable networking in mind, in a notion we called deferred input and output, where you can give commands like Print, say, or Move, for files that are on your machine to some foreign device when you're not connected, and when you're next connected that action will take place.

In short, connectivity is key to the PenPoint strategy. We can accommodate multiple network protocol stacks, in order to talk through a variety of networks, and through simple connections both to Macintoshes and PCs. That's inherent in the whole design.

I think we've paid much more attention to issues of connectivity and file compatibility than have typically been done, certainly between the Macintosh and DOS today.

One of the things that history seems to show that Apple did right was enforce interface guidelines in dealing with its developers.

Absolutely.

So that when you've learned MacWrite, most of that knowledge is not wasted when you go into something else. It seems like you've gone a step further than that, even.

Yes, in fact that's true. We've been able to raise the level of interaction and communication between programs, through the notebook metaphor and the embedded document architecture. We are delivering on the promises of information at your fingertips, if you will, for these systems.

The user doesn't think of the information as being organized in files, but rather sees the information as organized into a notebook. They simply turn pages to move from document to document. You could think of this as a form of object orientation, because the user doesn't need to think about the difference between programs and data. They simply access documents, and those documents are alive.

Now furthermore, the architecture allows one document to be embedded into another, live, so that you can do things like drag and drop between applications that might be present on the same page. So to compose a graphic inside of a word processing document, you actually bring the graphic program inside of the word processor and do what you want to do, and then you can turn off all the paraphernalia and borders and make it look clean with respect to the rest of the system.

There's a very high level of integration among programs, and services such as searching throughout the entire user workspace across applications. Hyperlinks and buttons are another very important aspect of this, so that the user can index across different applications and documents, and very simply create buttons which they can tap, and pages will turn and programs will scroll in order to bring into view the item of interest.

The Macintosh enforced a certain level of user interface coordination. We are enforcing beyond that a level of program cooperation that is much higher-level than is in any of the present operating systems.

You've also done a pretty good job of lining up strategic alliances with hardware and software vendors. What is their thinking on this? IBM, for instance, is a pretty conservative company.

Very much so. The reason those companies are reacting the way they are is not because they're being mesmerized by exciting technology. It's really that the customers are demanding solutions of this kind.

We began our marketing efforts by visiting many of the large potential customers, and they became very excited by the prospects of this technology. That's what got the computer companies interested, to make a long story short—they respond to their customers. The pen-based computing revolution is not being fueled by technology push but by customer pull, because there are real, immediate, and obvious problems that a pen-based computer can solve, that no portable or laptop can solve for many of these big customers.

For instance...

Well, one that we showed publicly at our announcement was an auto claims estimating system. An auto claims estimator goes around a car and can mark off damage and produce an estimate, and thereby pay you for the accident your car might have been in. This is a wonderful technology for that. This is an enormous market—the amount of payments that are made daily is staggering. To be able to make that even slightly more accurate, and to make those estimators slightly more efficient, is of tremendous value.

For the individual in the next five years, a different set of benefits will be delivered. We will see systems incorporate cellular modems in order to communicate back to your office, where you will be able to send and receive faxes, pick up your phone messages, look at documents and mark them up, modify contracts, get signatures on contracts right on the spot. Work on a document with a client, much as you would on paper, without turning you into a computer operator, if you will. These are just some of the ways in which pen-based computers will change the way people work and the way people think.

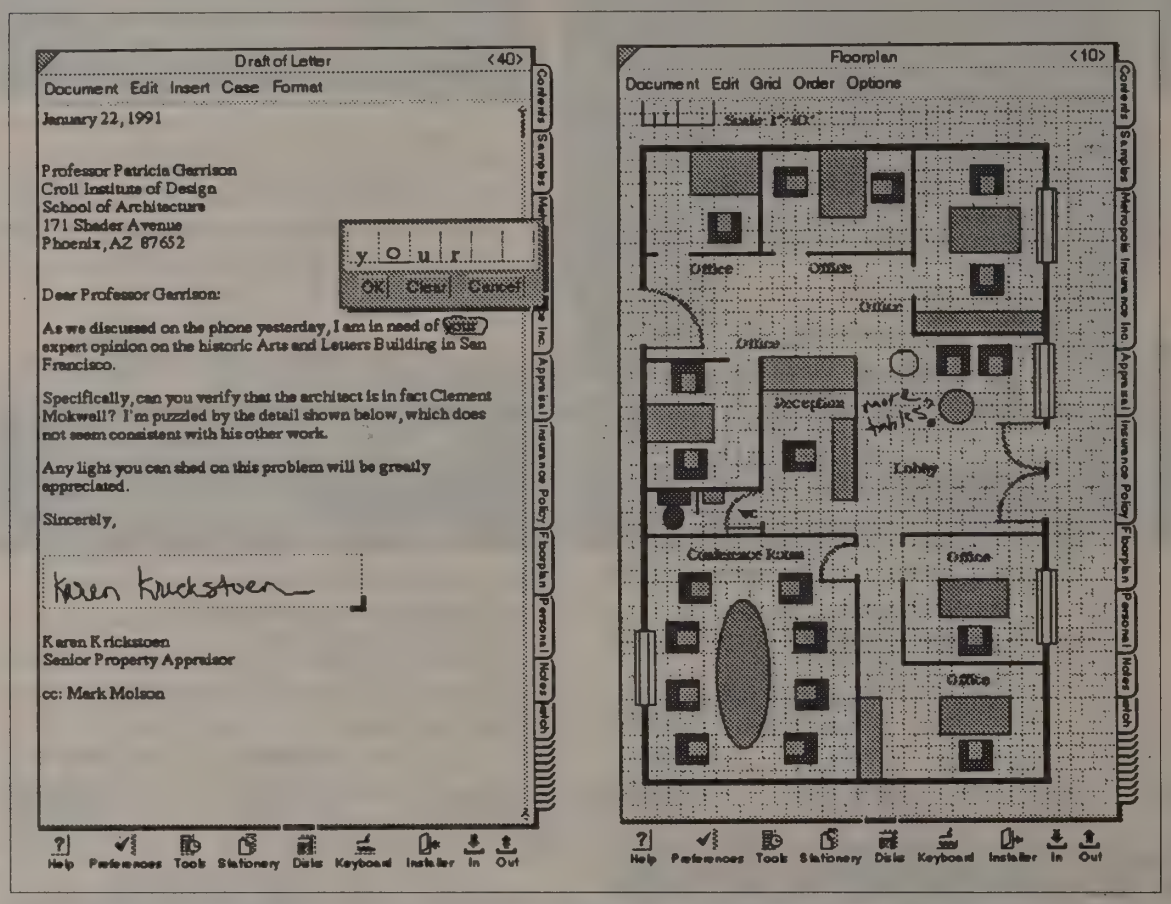
But clearly, it's not going to change the way the legal secretary does word processing, for instance.

No, not at all. This is not a substitute for a desktop machine, and it's not intended to compete head on with desktop or laptop equipment. On the contrary, it's complementary. It competes with that no more than desktop machines compete with minicomputers.

For people needing to do large volumes of data entry, the keyboard's the best way to do it. It's also the case that virtually all pen-based computers will be capable of hooking up a keyboard and using a keyboard with those systems. But the focus of a pen-based computer will be on the pen as the primary input device, and a keyboard will be the peripheral, which will be used occasionally for data entry.

It seems also that this technology opens up computers to people who traditionally haven't been able to use them or have been terrified of them.

I think that's true, because the difference between using a keyboard or a mouse and using a pen is the difference between walking on stilts and walking on firm ground. Walking on stilts is a skill that has to be practiced and learned. Using a pen is a skill that is already learned in school.



GO's PenPoint operating system integrates applications seamlessly in a notebook computing environment that actually works like a notebook.

DTK NEWS

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DTK GROWTH SPURS MOVE TO LARGER USA-HQ OFFICE

Strong sales growth has caused value-leader DTK Computer Inc. to move its headquarters into larger facilities for the second time in four years.

DTK's U.S. headquarters operations moved March 30th to new facilities in the City of Industry at 17700 Castleton Street, according to Thomas F. Bayens, Director of Marketing. The new offices are more than double the previous size.

Western Regional headquarters plans to move to a different location nearby when construction is completed in a few weeks. Regional headquarters serves the states of California, Oregon, Washington, Nevada, Idaho, Montana, Arizona, and Wyoming, Utah, and Western Canada.

DTK ADDS R&D FUNCTION TO SAN JOSE OFFICE

DTK Computer Inc. will soon add an R&D (Research and Development) function to its Northern California office in San Jose, according to Rany H.T. Hsieh, Vice President and General Manager.

"We want to work closely with our major suppliers, and many of them are in the Silicon Valley," said Hsieh.

Founded in 1981, DTK is one of the world's largest independent manufacturers of motherboards and add-on cards. More than 100 engineers and technicians are involved in the company's R&D operations.

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Users of DTK Computers rate its products higher in terms of service and reliability than many well-known brands.

Nearly 18,000 *PC Magazine* readers completed questionnaire evaluations in four categories with responses geared to the computer the respondent uses regularly.

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The fourth category involved buying the same brand again. DTK users rated the company more favorably than users of ALR, AT&T, Epson, Everex, and IBM rated their manufacturers.

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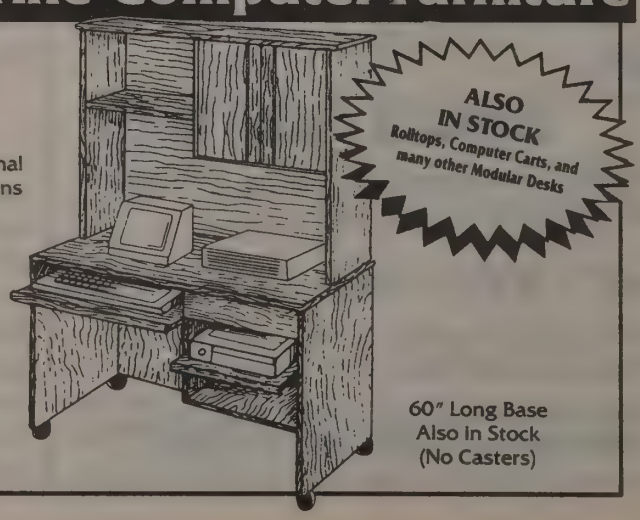

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It's so much more immediate and direct that it's extremely compelling for the new user. I don't know how many presentations I've been in where somebody listens to the presentations and says, "Now here's a computer *I* can use, or one that I want to use." Almost everybody, whether they are a computer user or a non-computer user, has this reaction when they experience a PenPoint machine.

Obviously supporting form-based input is one of the strengths of this approach, but where else might pen-based computing be useful?

Well, there's really a wide variety of applications that you'd expect to see that are somewhat different from what you'd find on a desktop machine, and some that overlap. Processing short, formal business documents, for example—a business letter—being able to sign it and fax it back out. Being able to modify a contract right on the spot, so you can agree on specific wording, without having to go back and have it word-processed. Architectural drawing packages, where you can modify with your client—move the placement of things, without having to go to a desktop computer. Electronic mail, where you would simply scribble or write your responses rather than type them, and have that image of your handwritten message sent.

Being able to take notes and index them, and be able to review them, keeping large volumes of notes in a very small amount of space, is another key aspect of this. Being able to look up information in a database—it would be very nice if you could bring a three-pound machine with you that contains all of your inventory records for the past ten years so you can be responsive to a customer.

When you begin to think about the breadth of applications, they are clearly as widespread and as varied as those that occur on the desktop. They're by no means limited.

I have the impression that originally you were going to do hardware as well as software, and the vision mutated at some point.

That's correct.

Why?

It was because we found that other large computer manufacturers were interested in producing PenPoint machines, and in order to build a PenPoint market, we wanted to have as many partners as possible. We felt that our strength was really in the design and delivery of systems software, and not so much as a high-volume low-cost producer of hardware.

So when IBM stepped up and told us that they were going to build a PenPoint machine, and others were expressing strong interest, we decided not to make that a major strategic thrust of the company any further.

THE ENVIRONMENT

Robert Carr
Co-founder and Vice President of Advanced Technology

In a sense, PenPoint seems to be the logical continuation of the software integration idea you

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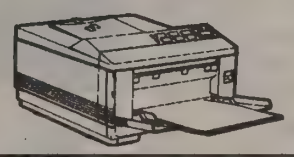

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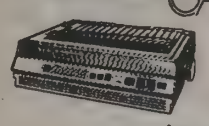

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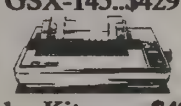

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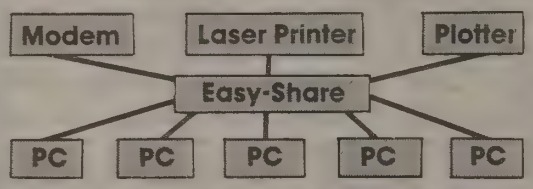

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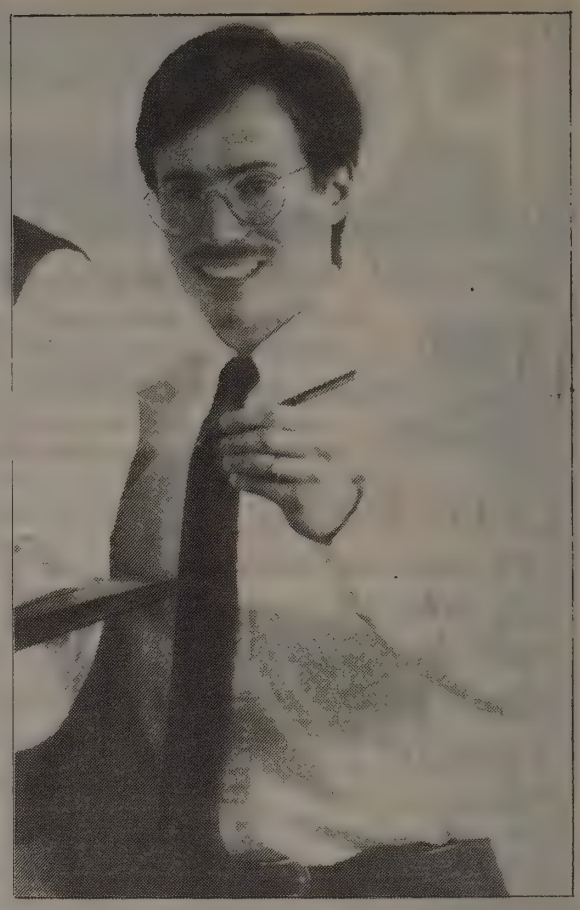

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started with Framework.

From a design viewpoint, what I tried to do with Framework was come up with a system that was highly integrated, both functionally in terms of the way it was built, but especially in terms of what the user could do with it—that they could flexibly mix and match all the different pieces together, and that the pieces would be absolutely as consistent and seamless as possible. Back then I was designing for a

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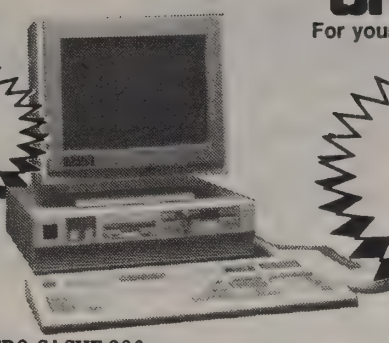

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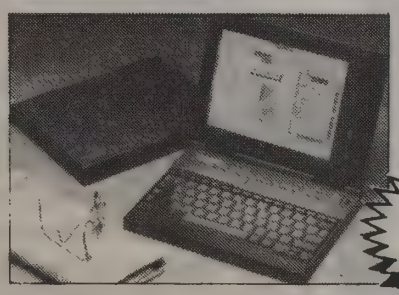

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256K character-mode PC that had floppies, a pretty different design viewpoint, but the result was very highly integrated and a fairly elegant design.

But because I was doing that on top of the operating system, it had to be a closed world. I couldn't necessarily allow another application developer to write an application that an end-user could buy and run inside of Framework. Framework had five functions, it was built in, you got them all from our product, from Ashton-Tate. It was a very good integrated software package, but that's the Achilles heel of integrated software packages, that they're closed worlds—you can't go out and buy your favorite packages and get that high degree of integration.

When I cofounded GO—since I did see there was a need for a new operating system, which there's very rarely a need for [*laughs*]—one of the things that attracted me was that I realized it was a chance to do an operating system the right way. Which, to my mind, is to really build in all the fundamentals right into the operating system, so you can have your cake and eat it too. You can have just as high or an even higher degree of integration as you can achieve in integrated software packages, but you could do that for all the hundreds or thousands of applications that would be written for it, not just the five functions that maybe an Ashton-Tate or a Lotus Symphony might build into themselves.

That was the promise. That's what excited me in 1987 starting GO.

The other thing that had happened as the '80s went by is that object oriented technology was maturing, and I felt that we could use that in the design and building of the operating system itself, as a better software technology to help achieve the high integration, yet have this high degree of modularity. Integration and modularity normally are not twin brothers or sisters—they run counter to each other.

How much of that is at the OS level, and how much is at the Interface Guidelines level, telling developers how to build applications?

A tremendous amount of it's built into the operating system. In terms of pure user interface consistency, when two applications are writing user interfaces and we want them both to be reasonably consistent, we do the same things that, say, the Apple UI guidelines do.

But in PenPoint, because it's object oriented, we can get a much greater degree of code sharing, and a high degree of code sharing is one of the best ways to get consistency. For instance, the text editor in PenPoint can be used by all the different applications. If they're all using the same text editor, that's the best way to guarantee that the user interface for text editing is the same in all those applications. You don't even have to write guidelines—you just say, "Here, re-use this. Speed your development, and there's less memory required and less code, because you don't have to re-implement text editing, and the user interface will be the same as all the other text editing." We've done that again and again because of the object-oriented character of the system.

When the Mac came out, one of the biggest stumbling blocks to software development was the learning curve for programmers. From a developer standpoint, is it easier with GO?

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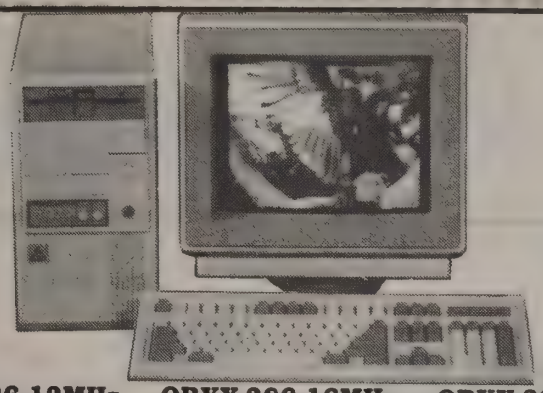

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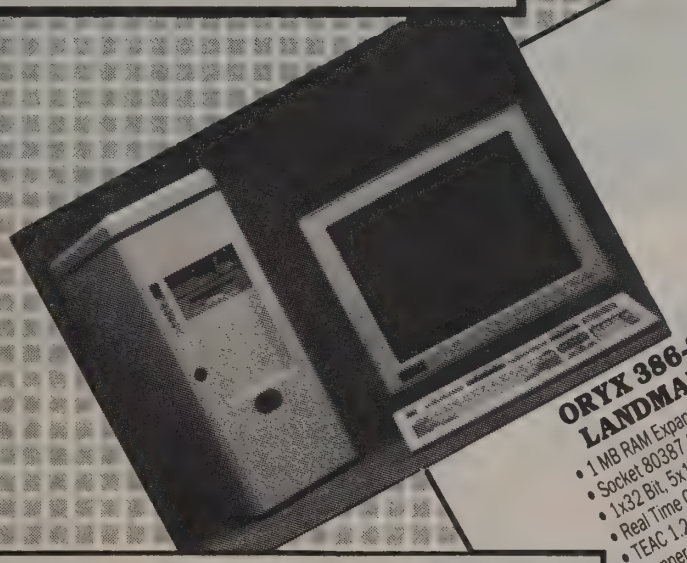

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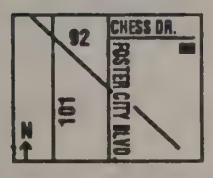

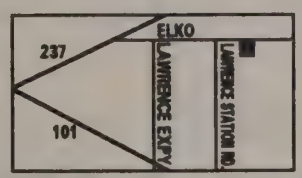

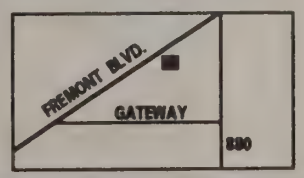

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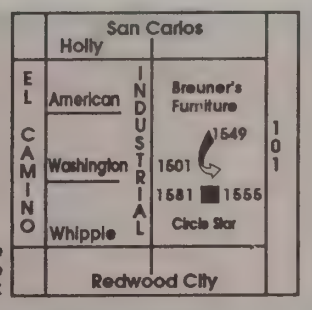

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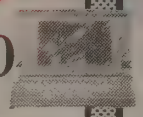

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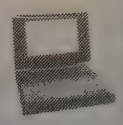

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WESTWOOD COMPUTERS

Yes, it is. I have to give credit to the Macintosh experience—they provided a toolkit with hundreds of pieces, but the developers had to learn how to piece them together. A few years later they came out with kind of a separate product called MacApp, the first real commercial application framework, a default or generic application. But they never built that in the operating system—it was something new that they kind of knitted together above the operating system, and they sell separately, so it's never been able to help the Mac community much.

But we took that same approach, of a generic or default application that's kind of a complete application with just the guts missing that make your application special. We took that same approach—it's one that's been prevalent in the research community in the '80s—and we built that right into the heart of the operating system so that all PenPoint applications just start from this already-implemented jumping-off point. They just write what makes their application special, a grid of cells for a spreadsheet, or graphics charting for a charting package. But they get a lot of functionality already written for them.

Do you expect that you'll attract more developers that are at the startup level, or more established vendors?

Both what we expect and what we're getting is a healthy mixture of both. We need both, and I think both are very interested. What they both like is the fact that there's no entrenched competition.

The large developers sometimes, I think, are motivated by the notion of a new market, but they're also motivated by a defensive motivation. Everybody saw that Lotus hurt themselves when they did not put a good spreadsheet on the Macintosh—that left Microsoft an opportunity to get a beachhead in the spreadsheet market. Now Microsoft's brought Excel back to the PC where it can do Lotus even more harm. So I think the big guys have learned that if there's a hot new platform, they should put a good product there, because if they don't somebody else might get a chance to get a good new product into that category.

Small guys all like the idea that there's no entrenched competition here, so it's a chance for them to build the next Lotus or the next WordPerfect, if they believe that it's a new high-growth market. And they do—we're getting quite a few companies founded just to write for PenPoint. I think that's the most significant trend over time, because that's where most innovative software comes from.

It seems to me that, especially with the forms-based applications, the usefulness of pen-based machines would be severely limited if they didn't talk to real databases on the other end. How are you dealing with database vendors?

The key is not so much that the database vendors are necessary, it's the access to the databases. So, for instance, a company called TechGnosis provides an SQL access product, and SQL gives you access to quite a few of the classical kind of minicomputer-server-based databases, Oracle included. On January 22, TechGnosis demonstrated that product working with our system at our developer's summit, in which you could fill out a form and that would specify a query, and data would be downloaded from a remote computer running SQL.

So at GO we've designed an operating system that specializes in connectivity. All of the operating systems to date didn't even have any connectivity at all for many years, and then over the years they got networking to talk to other computers just like themselves. So DOS machines tend to talk to other DOS machines, and Macintoshes to other Macintoshes, and that's after some years of work.

We've designed PenPoint to talk to a multiplicity of different kinds of existing standards. So we can talk directly to DOS machines, to Macintoshes, and that's because we don't have a single built-in file system or a single built-in networking protocol. We support multiple protocols and multiple file systems, so if you talk to Macintosh you can have PenPoint configured so it reads and writes the Macintosh file system as PenPoint's own direct file system. So I describe it as we're very polymorphic, or chameleon-like—we're really designed to dock and connect very strongly to multiple existing standards. We're helped in that because of the object orientation—it's easy for us to replace a subsystem and put in another one. We can replace the MS-DOS FAT file system we use and put in the Macintosh HFS file system.

So for instance, I have a MacWrite document. It would be highly preferable to load it into a tablet-sized machine, make additions and corrections on the road, and put it back on my Mac when I got back.

Exactly, and that's what we have working today. Right in the operating system we build in standard support for import-export, in the architecture and the user interface. We've written some file format translation filters, but third parties can write additional ones.

The result is that you can just plug in a cable to your Macintosh—in this case it would be an AppleTalk cable—open up a little browser window right on your PenPoint screen with a pen, and just drag the name of that file from the browser window into our notebook table of contents. Since it's a foreign file, we'll pop up a list of the kinds of applications in PenPoint that know how to read it—typically it'll be your word processor that'll stand up and say, "Yeah, I know that MacWrite format," or "I know about RTF" or whatever. And so then it's just sucked in.

Then when you're done, if you want to put it back, you again just drag it and drop it with your pen tip. It's direct manipulation just to move the files back and forth between the two windows.

You've got a lot of graphics support built in—do you see graphics as being a particularly significant application?

The creation and editing of graphics, I think.

There are certain kinds of graphics, like image processing or color image processing—24-bit, where one image takes 3MB on the disk. We're not a high-end database or image processing kind of environment, because PenPoint's designed for small mobile machines, where you don't have big hard disks and you don't have color.

But for graphics that you'd edit or create, like business graphics and presentation grapphics, slides, CAD/CAM, object oriented drawings, paint programs, we're fantastic, because the pen is the world's best tool to create and control graphics. So those all are important early markets.

What are the memory and storage requirements the system needs to operate in?

It requires a 386 processor, and the minimum storage requirement is 4MB of total storage. It's important to stress that that's total system storage. If you're comparing that against a Macintosh or DOS with Windows, you have to count how much space is used on disk versus memory.

So for instance, when you install Windows on your hard disk, it takes 4-5MB of space on your hard disk, then you need 2-4MB of RAM, then they recommend that you create a 4MB swapping file in 386 enhanced mode if you want to run several applications at once—which, of course, most people do. That's the point with Windows. And so the total there might be 13MB or so.

So it's a pretty economical system.

Yes. It's very economical, and it's designed so today it's running on notebook computers. In a few years there'll be steno-pad and shirt-pocket-sized devices that hardware manufacturers will also be offering. You'll pick the size of computer you want, depending on what you're going to use it for. If you're using it for personal informaition, you want something very small. If you're doing document processing or serious graphics, you probably want page-size, just so that you can have more area.

Do you see your evolutionary path as being based on Intel processors?

Certainly they'll be very important for us, and we're starting off with the 386, and it's a good processor. But no, not at all exclusively. Because PenPoint is highly portable. It's completely written in C, and it has a flat memory model—we're not tied to the Intel segmentation.

So you could conceivably have SPARC PenPoint machines, and Mac PenPoint machines?

Absolutely. We've carefully designed it so it can be ported to RISC processors. We think that the marketplace will benefit from the low cost and great CPU power and low power consumption characteristics of those chips, including SPARC. So we're going to pursue those with hardware partners.

THE COMPANY

Bill Campbell
President and CEO

You come from a very different place than Jerry and Robert. To oversimplify it considerably, they're technical wizards with a track record for breakthrough technologies, and what you do is build companies. How do you see that working?

I'm hoping that that would make it a perfect marriage. As you say, Jerry and Robert have a reputation for creating phenomenal technologies. Beyond that, they've been able to turn those technologies into viable products.

My job, as I see it, is to provide an organization and

Continued on page 87

BEST SUPPORT

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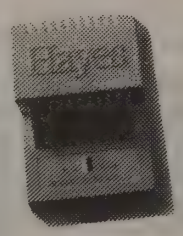

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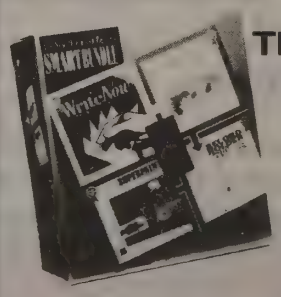

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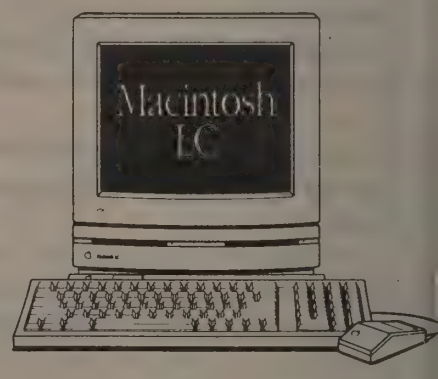

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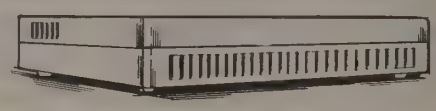

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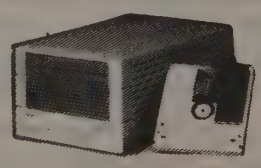

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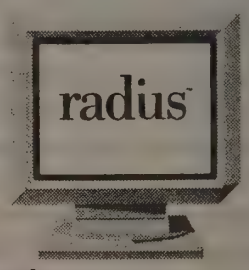
Price includes interface card. **1249**

Pivot for Macintosh IIci & IIsi.....99



19" Monochrome

Two page display with card for SE, SE/30 or Macintosh II. (CPU not included)

Now Only **1199.**

21" Monochrome Display for Macintosh **1469**

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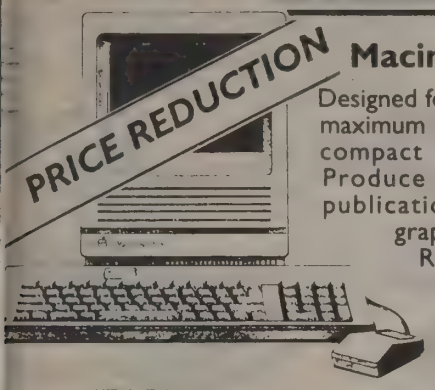
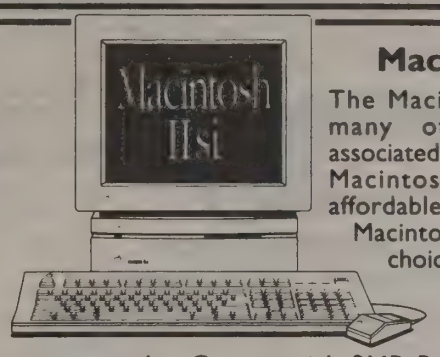


PRICE REDUCTION

Macintosh® SE/30

Designed for people who want maximum performance from a compact computer system. Produce newsletters with publication quality text, graphics and art. IMB RAM, Motorala 32-bit 68030 micro-processor. 1 Apple FDHD internal drive, 40 MBHDD

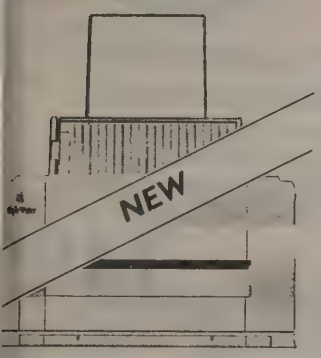
Keyboard extra.



Macintosh IIsi

The Macintosh IIsi offers many of the features associated with the modular Macintosh family at an affordable price. This new Macintosh is an excellent choice for the business user who needs power, net-working and growth. Comes with 3MB RAM, 40MB HDD, Microphone.

Keyboard and Monitor extra.



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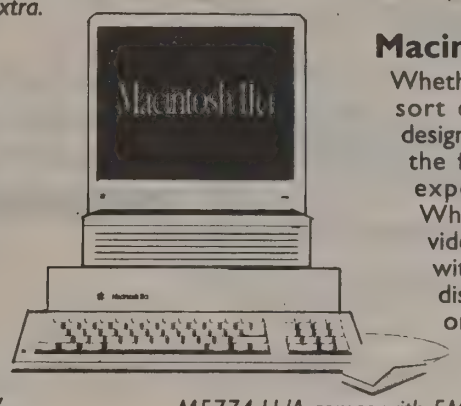
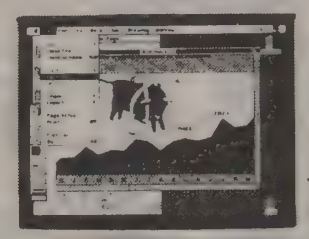


Macintosh® IIci

Whether you crunch numbers, sort data, process words or design products, the IIci has all the features you've come to expect from Macintosh. What's more. its built-in video support lets you work with a variety of monitors to display a spectrum of colors or shades of gray without adding a video card.

M5774 LL/A comes with 5MB RAM and FDHD® drive. Keyboard and Monitor extra.



AppleColor® High Resolution RGB Monitor

•High resolution color for the Macintosh modular family • 640 x 480 pixel resolution • 13" Trinitron CRT perfect for graphics intensive application.

PRICE REDUCTION

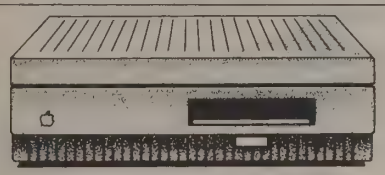
LaserWriter II NT

With 35 internal fonts, 2 MB RAM, and PostScript®, the LaserWriter II NT yields professional quality documents quickly and easily.

Apple® StyleWriter® Printer

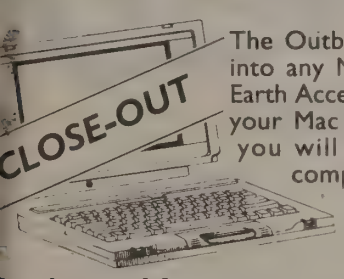
The new Apple® StyleWriter Printer combines Bubblejet technology with TrueType® fonts for a truly affordable laser-quality output. Perfect for the home office.

Apple, Macintosh, LaserWriter, FDHD, AppleColor,StyleWriter, MultiFinder,TrueType and the Apple logo are registered trademarks of ©Apple Computer, Inc. Classic is a registered trademark licensed to ©Apple Computer, Inc. PostScript is a registered trademark of Adobe Sustems.



Apple CD SC Drive

An essential part of any Desktop Media system, the Apple CD SC drive lets you quickly access information from the disc and use it for multimedia presentations. A CD Audio Chip and headphone jack let you listen to audio CD's when not working with CD ROMs. *#M2700/B*



CLOSE-OUT

The Outbound™ Laptop integrates easily into any Macintosh office. Once Whole Earth Access transfers the ROM chips from your Mac Plus to the Outbound Laptop, you will have both the lightest Mac-compatible laptop available, and an enhanced Macintosh desktop system

Outbound Laptop

Macintosh Plus I/F w/40 MB Hard Disk

Macintosh computer not included

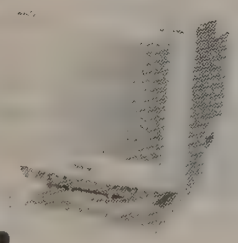
Only 2 at this price.

2495.

SONY

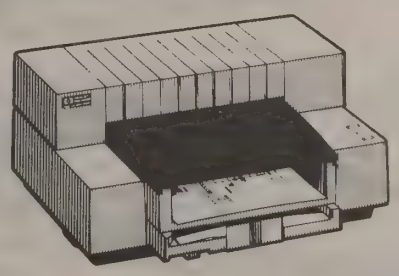
Sony 1304 HG

Tilt and swivel • Analog cable 1024h 768v • .25 dot pitch • VGA, CGA, Mac II & 8514A compatible



669.

HEWLETT PACKARD



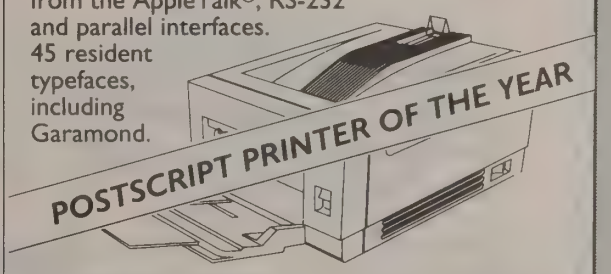
DeskWriter Printer

Hewlett-Packard's DeskWriter printer, now AppleTalk compatible, brings laser-like quality to the Macintosh line.

639.

QMS-PS 410

It's true Adobe® PostScript®, and you can take data automatically and simultaneously from the AppleTalk®, RS-232 and parallel interfaces. 45 resident typefaces, including Garamond.



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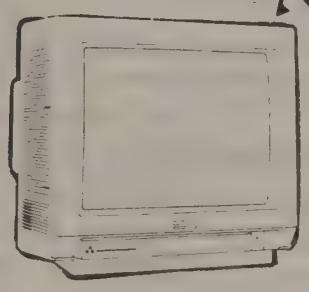
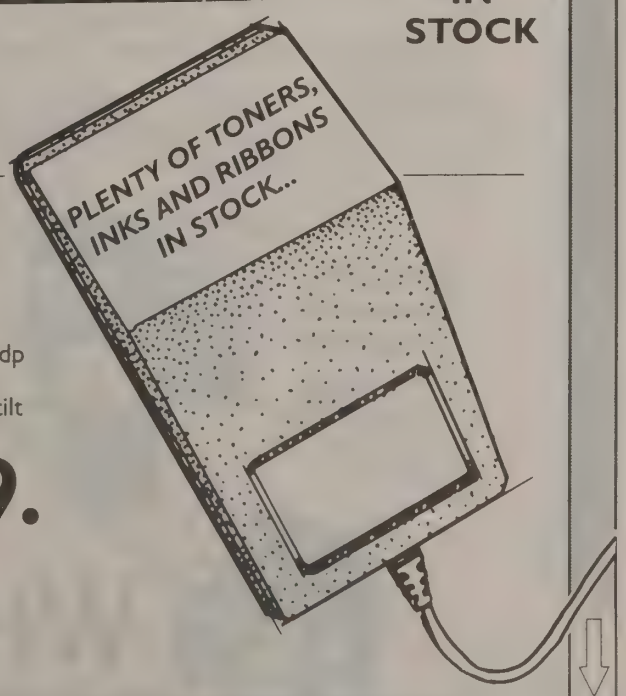
MacSync

•640h x 480v resolution • .29dp • 14" diagonally with cable and tilt swivel



469.



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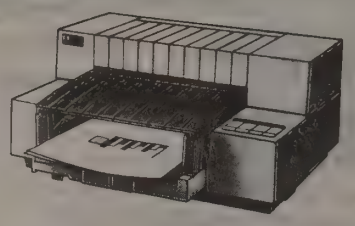
"HP Leads the Revolution in Resolution"



HP DeskJet 500 Printer

• Improved print quality • Added internal fonts • 3 year warranty • Water resistant ink cartridges.

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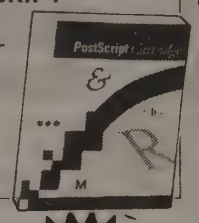
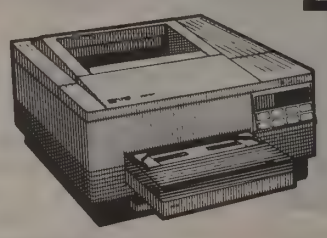
ADOBE POSTSCRIPT CARTRIDGE
-LaserJet II Owners- You can now enjoy all the benefits of true Post Script software from Adobe **299.**



Now Available



Hewlett Packard AppleTalk for LaserJet III

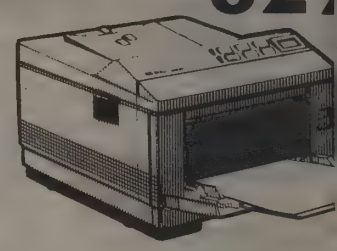
HP LaserJet III Printer

• Now Hewlett-Packard LaserJet Printers are PC or Macintosh compatible • AppleTalk® compatibility with optional interface • Dependable HP performance.

HP LaserJet IIP Printe

• Most affordable HP Laserjet pri
• Publication quality output.

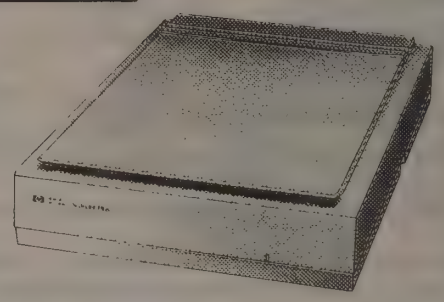
829



HP LaserJet IIP / PostScript Printer

• Fast 4 PPM printing
• 1.5 MB RAM—includes PostSc
• Macintosh ready/ plug 'n play
#33427A

149



HP ScanJet Plus Scanner

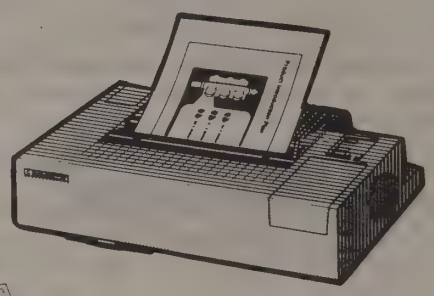
• 256 grey scale levels (8 bit) for high-resolution image
• Wide range of contrast & intensity control • PC Macintosh compatible • Price includes interface.

149

HP PaintJet Color Graphics Printer

• High quality color charts & graphics • PC or Macintosh compatible • Wide range of software support.

795.*

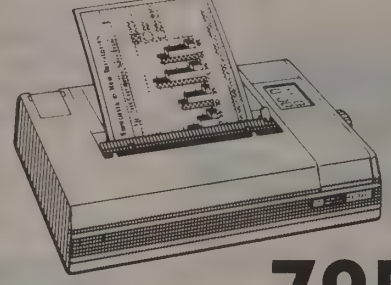


HP PaintWriter Color Graphics Printer

Made for Macintosh Personal Color Printer

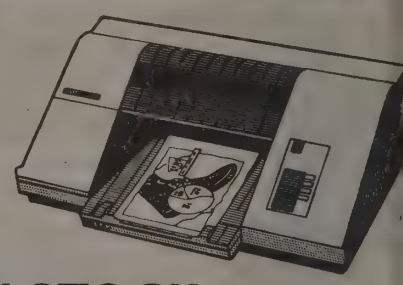
• 3 times faster than HP PaintJet for Macintosh applications
• Bolder output colors
• New color software tools

795.*



HP PaintJet XL Color Graphics Printer

• Enhanced PaintJet quality
• Faster print speed
• Presentation mode- for highest quality graphics on paper • Transparency mode.



IN STOCK

* After $200 manufacturer's rebate. See stores for details. Rebate ends May 31, 1991. Quantities limited to stock on hand. Errors subject to correction.

HEWLETT PACKARD Calculators

HP 17BII Financial Calculator

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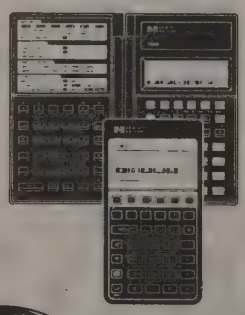
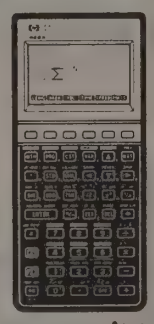


Take the lead with HP's best financial calculators.

• Complete set of financial functions
• Menus and softkeys to guide you
• Algebraic or RPN entry

Come see it today.

HP 19BII Financial Calculator..... 149.



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HP 48SX Scientific Expandable Calculator

Power-users— take the lead with the new HP 48SX!

• Over 2100 built-in functions
• HP EquationWriter application
• Graphics integrated with calculus.

HP calculators- the best for your success. **325.**

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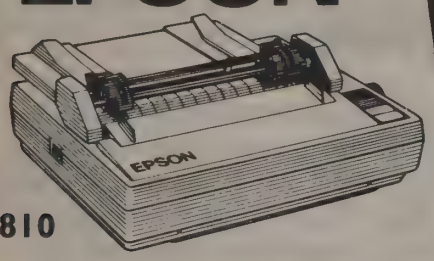
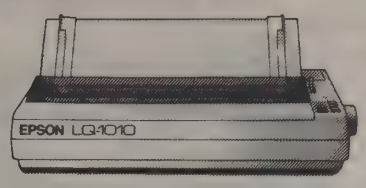
TWO YEAR WARRANTY ON ALL EPSON PRINTERS



EX-810

9 pin • SmartPark™ paper handling • 200 CPS super draft • 30 CPS NLQ • High resolution graphics.

179.

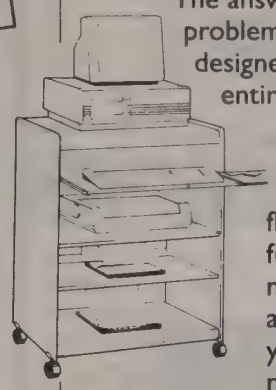


LQ-1010

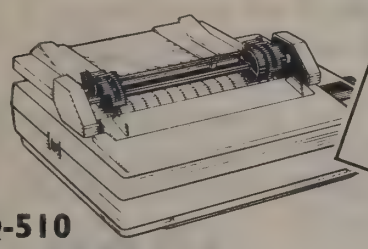
• 180 CPS draft, 60 CPS letter quality • 24 pin, 360 x 360 dpi graphics • SmartPark™ and SelectType • Wide carriage.

429.

All-In-One Mobile Microcomputer Center



The answer to your storage problem. This space saver is designed to organize your entire microcomputer system- including your printer- in less than three square feet of floor space. Crafted from wood solids and matching veneers, this is a high quality solution for your computer furniture needs.

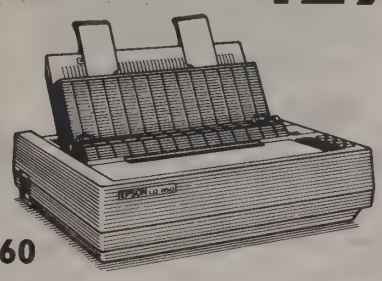


FREE MULTI-MODE FONT WITH PURCHASE OF LQ-510

LQ-510

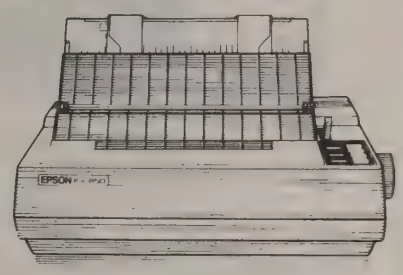
Featuring SmartPark™ paper handling • 180 CPS draft • 56 CPS letter quality • 2 resident letter quality fonts

269.



LQ-860

Epson's newest letter quality color printer • 300 CPS draft • 98 CPS NLQ.



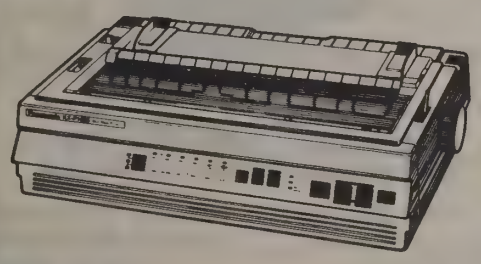
FX-850

• 9 pin dot matrix • 264 draft 54 NLQ • Push tractor paper park for single sheet feed.

369.

IN STOCK

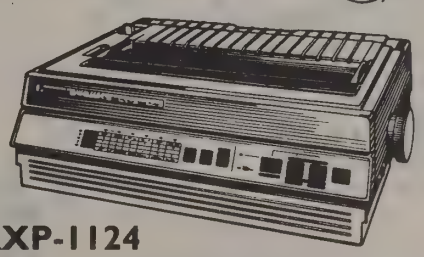
Panasonic Office Automation OA



KXP-1695

• 9 pin • EZ set control panel • 330 CPS draft • 66 CPS NLQ • 8 resident fonts • 16.5" wide carriage • Push/pull tractor • rear, bottom and front paper feed.

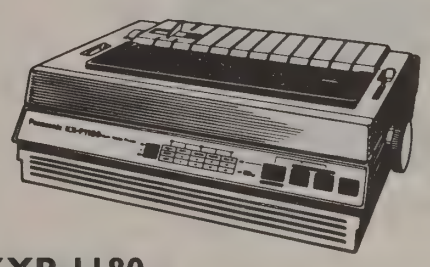
395.



KXP-1124

• 24 pin • EZ set control panel • 192 CPS draft • 63 CPS NLQ • 7 resident fonts • 11.7" wide carriage • Push/pull tractor • 360 x 360 dpi

AVAILABLE



KXP-1180

• 9 pin • EZ set control panel • 192 CPS draft • 38 NLQ • 6 resident fonts • Push/pull tractor • 11.7" carriage.

149.

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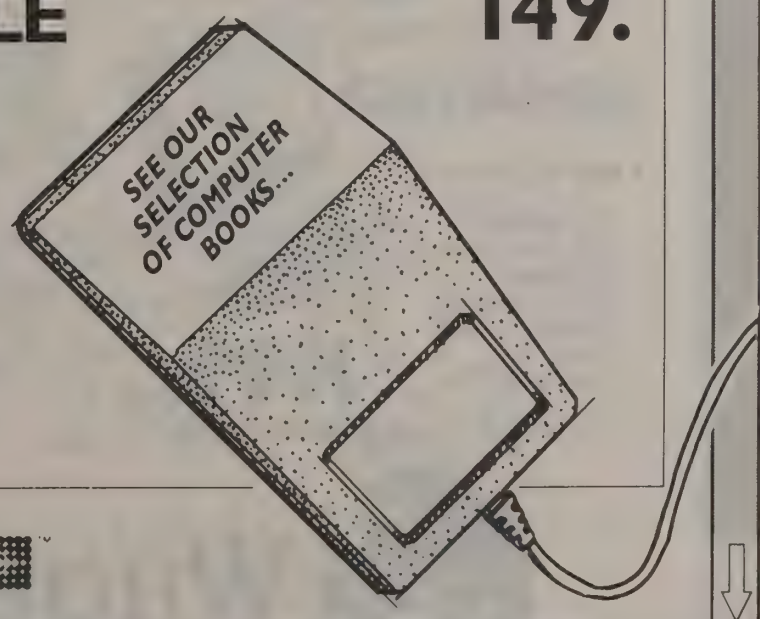
maxell®

We now carry a full selection of Maxell brand printer ribbons. Long lasting and reasonably priced, Maxell ribbons are designed to fit the most popular printers available today. **Come in and check it out!**



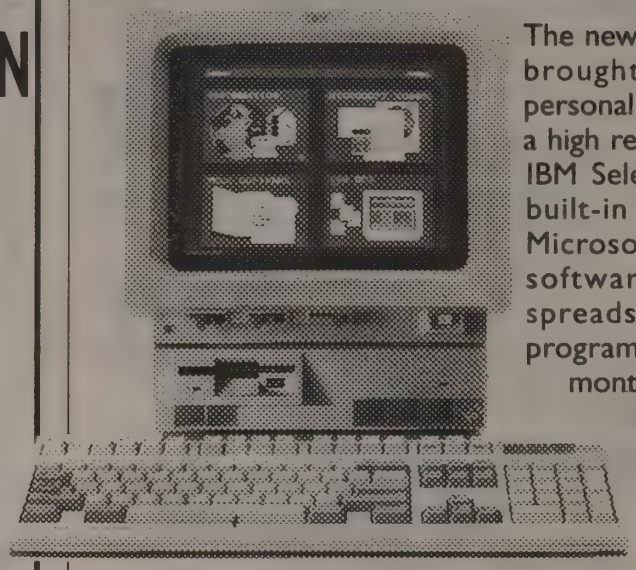
Connecting Point

BEST SELECTION

Authorized Personal Computer Dealer

IBM

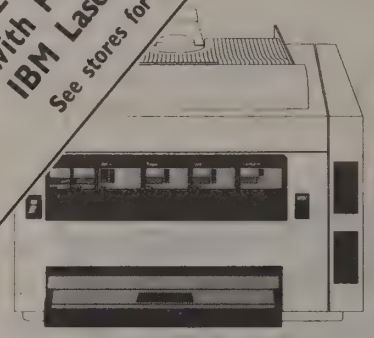
Bring It All Back Home with the IBM® PS/1™



The new IBM PS/1 is the ultimate home computer brought to you by the people who defined personal computing. Right out of the box you get a high resolution VGA Photo Graphic™ display, an IBM Selectric Touch™ keyboard, a mouse and a built-in modem. Plus you get IBM DOS and Microsoft Works®, the best selling integrated software package with word processing, spreadsheet, communications, and database programs. You also get, at no extra charge, 3 months free of the Prodigy® service for home shopping, banking, travel arrangements and more. This is an easy to use computer at an affordable price. Come see it in action today at Whole Earth Access.

MONO SYSTEMS STARTING AT 1399. ALL STORES

FREE SOFTWARE with Purchase of IBM Laserprinter
See stores for details

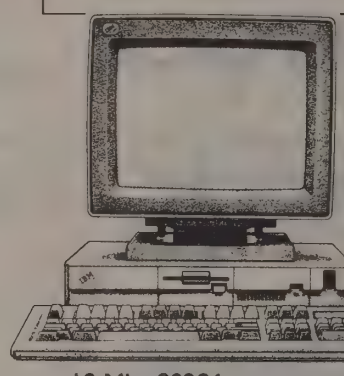


IBM Laser Printer

- 10 pages per minute
- HP comp.

1499.

4019 IBM
All Stores **Laser Printer E** **999.**



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The Best for Less.
IBM PS/2® 30-286

- 10 Mhz 80286 processor
- 1 MB RAM expandable to 16MB RAM
- 1.44MB floppy drive
- VGA graphics on board.

Monitor extra **1249.**

PS/2 30-286 30 MB **1599.**

IBM PS/2 Model 3

- 80386SX 16 Mhz processor • VGA on boa
- 2MB RAM expandable to 16MB • 30MB ha drive.

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PS/2 Available in Berkeley and San Jose Stores Only

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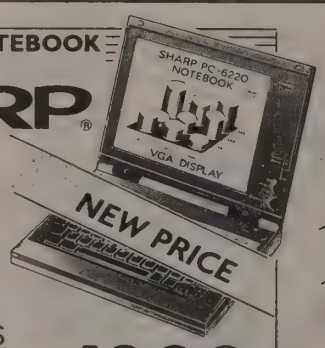
NOTEBOOK

SHARP®



Only 4.4 lbs!

- 12 Mhz 80286
- VGA paper-white LCD display
- 20MB hard drive
- 1 MB RAM • DOS 4.01 and laplink in ROM.

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NEW PRICE

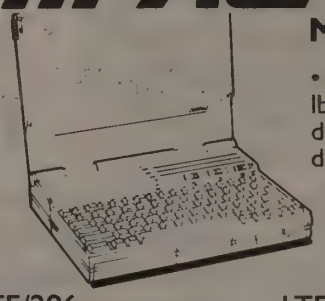
COMPAQ DESKPRO 386s

Built around the revolutionary 80386SX processor, the DP 386S delivers 386 performance at a non-386 price.

Monitor extra **1799.**

NOW WITH 2MB RAM

COMPAQ



Model 40

- 8.5" x 11" & onl lbs. • 1.44 MB flop drive • 40MB hard drive..

2849

LTE/286 Model 20 **2595.**

LTE Model 20 **184**

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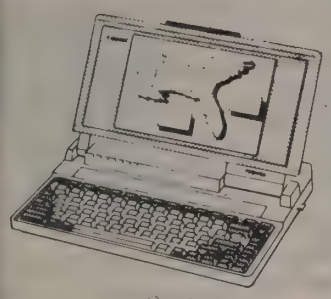
We feature Megahertz modems for the Toshiba family of computers.

Toshiba T1000 SE



Toshiba's affordable and easy to use Notebook PC for today's business-person on the move. Plenty of comfortable features.

999.

NOTEBOOK SOLUTION REBATE
BUY A TOSHIBA NOTEBOOK WITH TOSHIBA ACCESSORIES AND GET MONEY BACK
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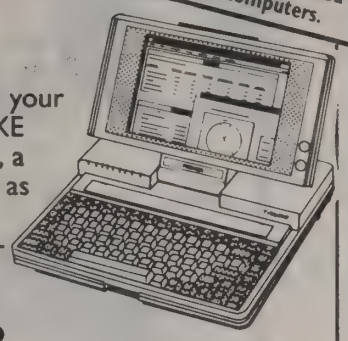
Power Packed T1200XE/40

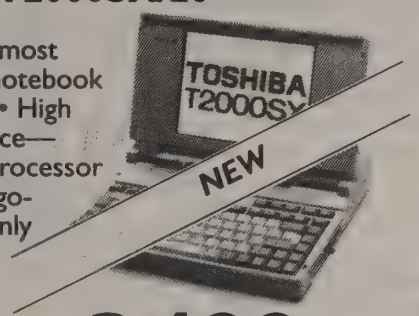


Carry 286 hard disk power in your briefcase. The Toshiba T1200XE features a large, bright display, a comfortable keyboard as well as many other performance features to enhance your productivity.

2599.

T1200XE/20 ..... 2149.

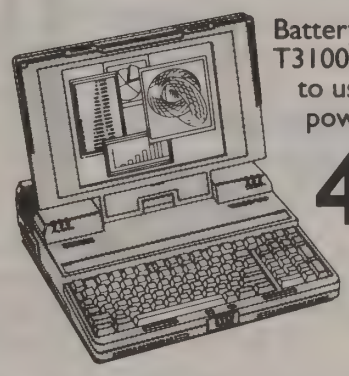
Toshiba T2000SX/20



•Toshiba's most powerful notebook computer • High performance—386SX™ processor • Super ergonomics / only 6.9 lbs.

Limited Supply **3499.**

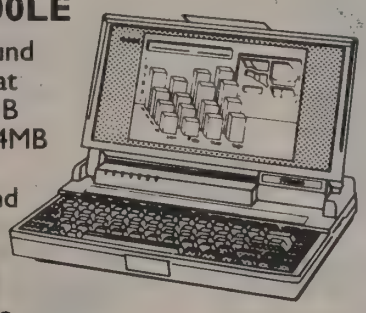
Toshiba T3100SX/80



Battery-operated T3100SX Freedom to use 386SX power anywhere.

4199.

Toshiba 1000LE



Toshiba's 6.5 pound notebook PC that has it all. A 20MB HDD, a 3.5"/1.44MB floppy drive, a terrific display and keyboard.

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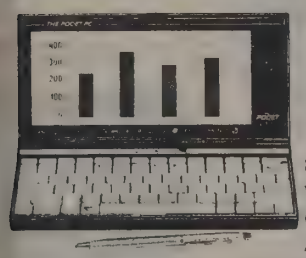

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Everything you need, in a size you've always wished for • 2-3 months of normal use on two AA alkaline batteries • MS-DOS 3.3 runs your favorite PC software • 80-character X25-line screen • LCD display with monochrome graphics • Built-in productivity tools.

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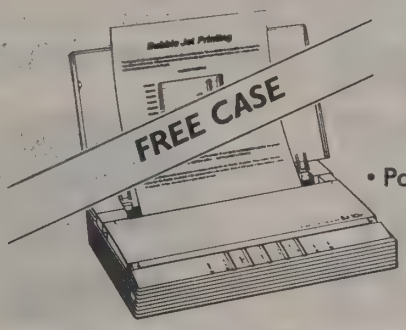

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• Portable 300 dpi printer • Optional sheet feed.

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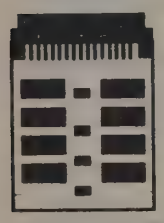

• Lifetime warranty • Available for all Toshiba portables • This month's special.

2MB T1200XE 199.

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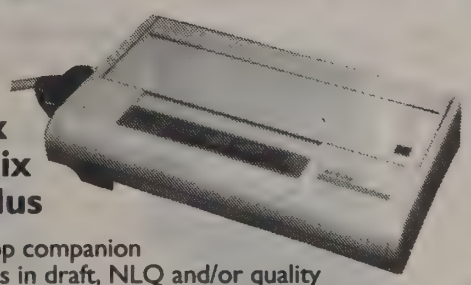
Kodak Diconix 150 Plus



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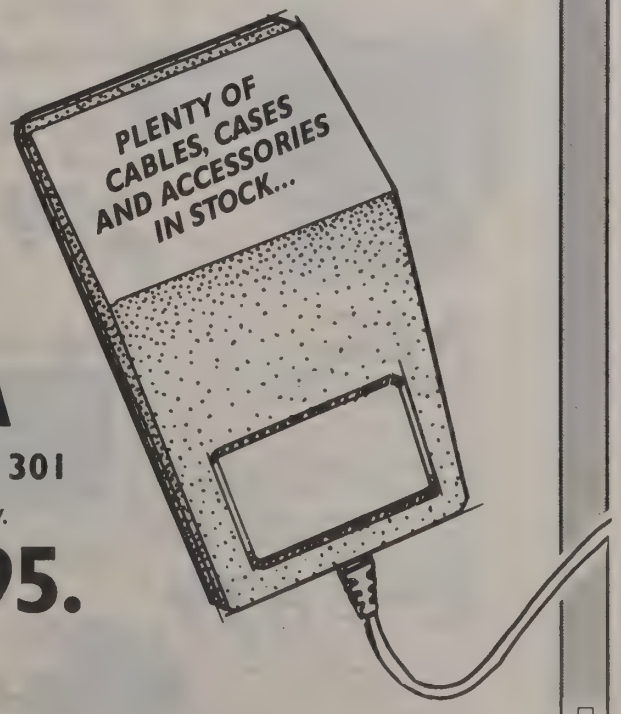
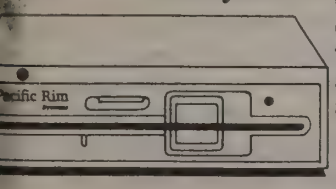


Pacific Rim Systems



Pacific Rim Systems' external 3.5" and 5.25" floppy drive subsystems are available for every PC **See stores for the model you need!**

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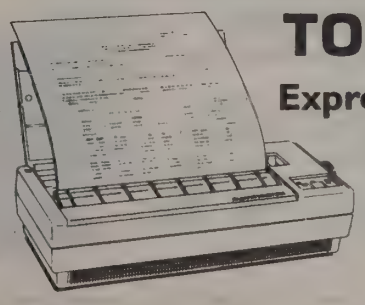

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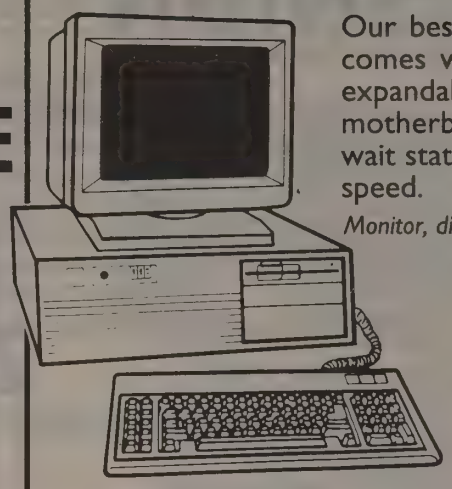

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Our best selling Turbo 286 comes w/512K of memory expandable to 4MB on the motherboard. 16 Mhz at 0 wait states means maximum speed.

Monitor, display card extra

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- 16Mhz 386SX
- IMB RAM
- 1.2MB floppy
- 1:1 hard drive controller IDE
- 101 keyboard
- 2 serial 1 parallel port

595.

WEA S486-2 Standard

- 4MB RAM upgradable to 8MB on motherboard; 16MB w/32 bit memory card
- I/O, 1.2MB FD, 1(
- keyboard • IDE controller
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- True 20 Mhz 386 motherboard
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- 64k cache • 101 keyboard

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- VGA color monitor
- Analog input
- .25mm aperture grid

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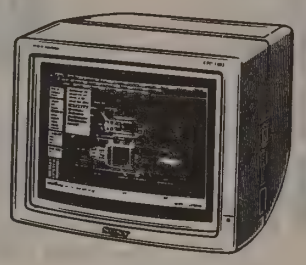

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- 14" VGA color
- .31 dot pitch
- Includes tilt & swivel base

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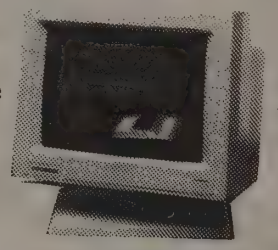

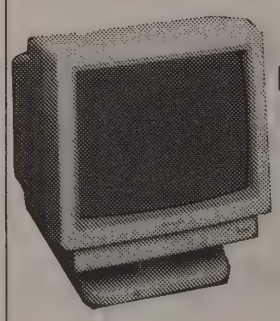

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14" analog multi-frequency 640 x 480, .51 mm dot pitch

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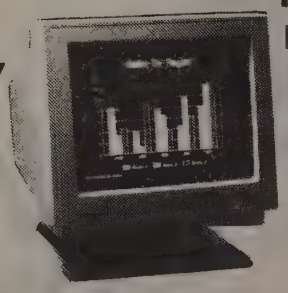

Hyundai HMM-1401A 14" Monitor

- 14" amber flat screen 720h x 350v with tilt and swivel.

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MultiSync 3D

The NEC 3D is one of the best multiscan monitors made. 1024 x 768 resolution means you can use sophisticated Super VGA software and hardware with this screen.

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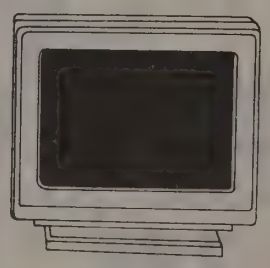

Leading Technology

12" Amber Monochrome

- Non- glare • 720h x 350v with tilt & swivel and cable

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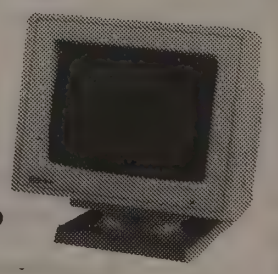

SIGMA DESIGNS

Sigma VGA Legend

- 1024 x 768 • 16 colors
- Interlaced or non-interlaced • No switches or jumpers • 512 K video memory upgradable to IMB
- Exceeds European ergonomic standards for flicker-free displays
- Upgrade kits in stock (VGA CARD ONLY)

229

VIDEO CARDS

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PARADISE BASIC VGA	1

MATH CO-PROCESSORS

80387-16SX (16MHZ "SX" SYSTEM ONLY)	3
80387-20	4
80387-25	5
80387-33	6
BOX287XL (8-20MHZ VARIABLE SPEED)	2
BOX287XLT (FOR COMPAQ LTE286 ONLY)	2

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SEAGATE ST 251-1 40MB 28 MS	3
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MICROPOLIS 1654-7 150MB 16MS	8
QUANTUM PRO 40S (SCSI) 42 MB 19MS	3
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ELEFONT CARTRIDGES PLUS gives you two cartridges, an Elefont Desk and Headline, with all the fonts you need without swapping cartridges. This ultra cartridge set conveniently prints everything from 30 point headlines to 5 point footnotes in a choice of four type faces: CG Times, CG Triumvirate, Letter Gothic, and Prestige Elite.

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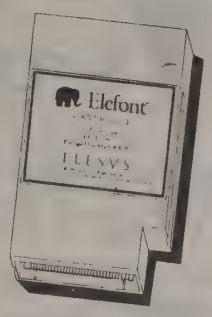

ELEMEMORY 256K CARTRIDGE Adds memory for downloading soft fonts to your HP DeskJet 500 or HP DeskJet PLUS.

109.

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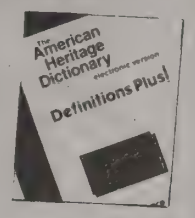

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- Improve your productivity
- Enhance your language skills
- Have fun with words

For IBM and Compatibles

69.

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WordStar Legacy

WordStar Legacy redefines the high end of Windows™ word processing by combining the traditional text editing tools of DOS word processors with advanced page layout, superior DDE™, and Micrografx® graphics editing tools.

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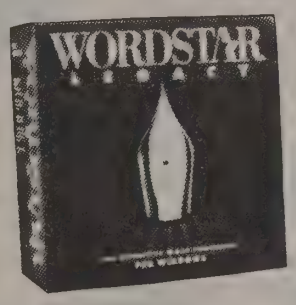

WordStar Laptop Collection

Now the best in laptop software available today is bundled together in a single package: The WordStar Laptop Collection. Your get powerful word processing, easy file exchange between laptop and desktop PCs, and a calendar and to do list. Plus powerful telecommunications software and a handy mail list manager.

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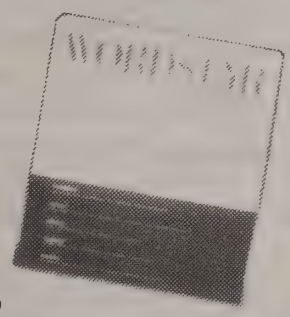
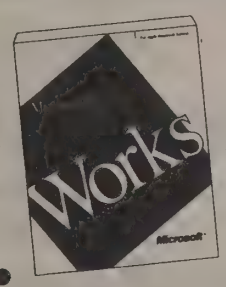


Microsoft®

Making it all make sense™



Microsoft Works for Macintosh

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Microsoft Works for IBM and Compatibles

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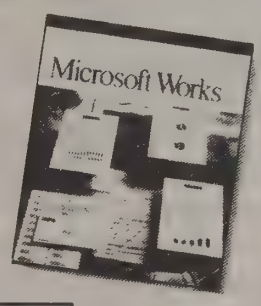

FREE! Small Business Success Kit with Purchase of Microsoft Works.
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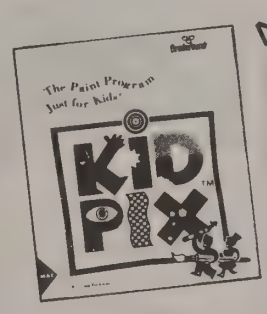
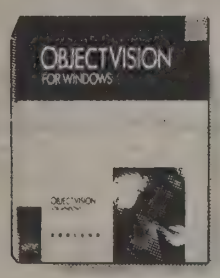


KidPix™

Lots of fun!

Macintosh Compatible.....39.

BORLAND/WINDOWS



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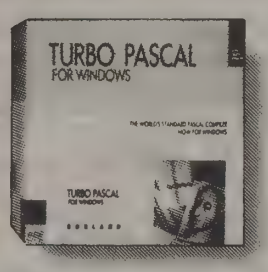

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Write, compile and run your Pascal program all from within MS Windows. This product has everything you need to write Windows programs—including the Whitewater Resource Toolkit. (Microsoft's SDK in not required)

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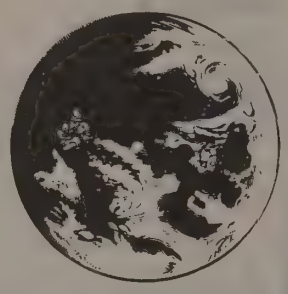
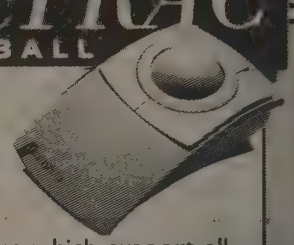


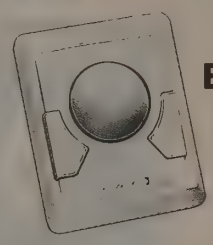
MacTRAC TRACKBALL



Point for Point, MacTRAC is Today's Best Value

•MacTRAC is available in versions which support all Macintosh computers • MacTRAC constantly monitors the speed at which the ball is moving • Stationary operation • Cursor drag lock button eliminates the need to hold down a button to drag the cursor • Allows optimum performance for either right or left handed users.

MAC Version **79.** PC Serial Version **99.** PC Bus Version **109.**



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Expert Mouse Gives You Everything You Need

•Serial version for IBM PC compatibles **129.**

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MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
MAY 1991		1 Intro to Desktop Publishing 2 pm -5 pm....$29.	2 Intro to DOS 4:30 pm -6 pm....Free	3	4 Intro to Mac 12:30 - 2pm.....Free Intro to DOS 2:30 pm - 4 pm...Free
6	7 Beginning MS Excel Mac 2 pm -5 pm....$29.	8 Beginning MS Word 4.0 Mac 2 pm -5 pm....$29.	9	10	11 Intro to Mac 12:30 - 2pm.....Free Intermediate Macintosh 2 pm -5 pm....Free
13	14 Intermediate MS Excel Mac 2 pm -5 pm....$29.	15	16 Beginning MS Works Mac 2 pm -5 pm....$29. Intro to DOS 4:30 pm -6 pm....Free	17 Beginning MS Word 5.0 PC 10 am - 1pm....$29.	18 Intro to Mac 12:30 - 2pm.....Free Intro to DOS 2:30 pm -4 pm....Free
20	21 Advanced MS Excel Mac 2 pm -5 pm....$29.	22 Advanced MS Word 4.0 Mac 2 pm -5 pm....$29.	23 Inter. MS Works Mac 2 pm -5 pm....$29. Intro to DOS 4:30 pm -6 pm....Free	24 Intro to Pagemaker 10 am -5 pm....$179.	25 Intro to Mac 12:30 - 2pm.....Free Intermediate Macintosh 2 pm -5 pm....Free
27	28 Advanced MS Excel Mac 2 pm -5 pm....$29.	29 Advanced MS Word 4.0 Mac 2 pm -5 pm....$29.	30 Advanced MS Works Mac 2 pm -5 pm....$29. Intro to DOS 4:30 pm -6 pm....Free	31	

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(408) 554-8300
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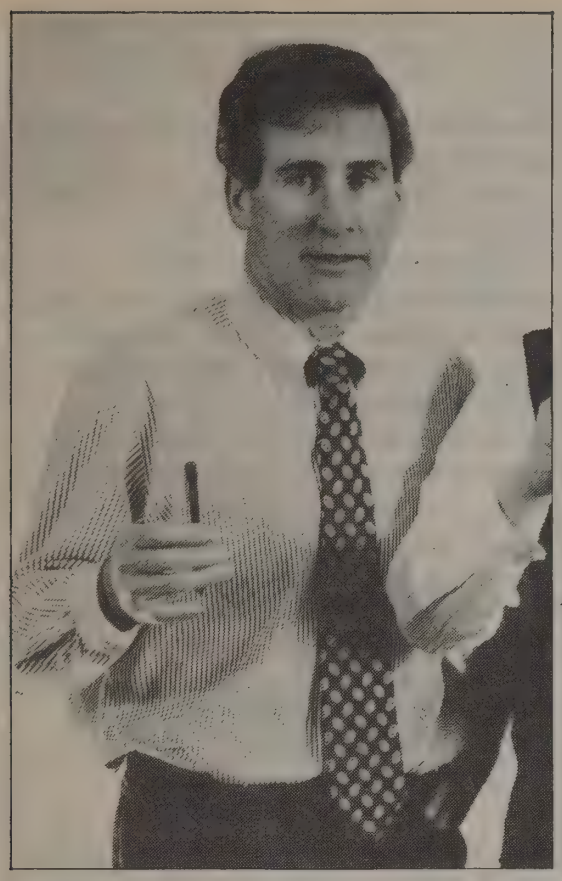

"The mobile professional has largely been ignored. A notebook PC with a traditional keyboard is not very logical for truck drivers or meter readers or insurance claim agents. So that's a new group that we think we can bring into computing with these types of devices."

Continued from page 77

management structure for the company so that this technology can reach the market. It is a phenomenal technology, well-conceived and well-executed. It will have as much competition in the marketplace as any great technology that's ever come into the marketplace will have.

So the job that I have, that all of us at the company have, is to ensure that this wonderful technology can make it to market and be judged on its quality and its merits, not just strictly by the size of the company.

So what we have to do is make GO more real than life itself.

Fervor and zeal!

Yeah, but it has to be really believed by the customer that it's solid, stable, able to deliver. Able to support OEMs, able to support its customers. There's a lot of structural things that I've had experience with that hopefully we can put into the company to enable it to be successful.

This involves things like alliances with other vendors, software evangelism, dealer channel, all that stuff?

It starts with the constituencies that will make the product successful. Which comes first, the chicken or the egg? Is it the OEMs, or is it the software providers? Both of them have to be there. In order to get the OEMs excited, many of the prominent software developers have to sign up. In order for software developers to sign up, many of the prominent OEMs have to sign up with the operating system.

That's one problem Apple didn't have—Apple didn't have to evangelize the hardware...

Exactly. So we're in a situation where we're working with both constituencies, and I see that as my primary goal.

The second is to try to put an operating structure in place that will allow the company to grow. Those are things like financial systems, operational systems, processes that can allow the company to enjoy its freedom—careful use of money is an example. Those things are coming along pretty well—they're fairly easy to institute, and we've got really smart people here who really understand those things. The partnering side of it is what we really have to focus our attention on.

That being so, and since you're essentially going head to head with Microsoft, for which lots of developers are already writing software, what's the advantage for a developer in going with PenPoint?

Yes, Microsoft is the most formidable opponent. It's formidable because, as you indicated, there's this enormous base of code that's being created called Windows, and the momentum over the last nine months behind Windows has been enormous.

Microsoft's basic selling proposition is that the pen extensions to Windows are very easy to do for someone that's invested anywhere from eighteen to thirty months in development of a Windows product. Trying to spend a little bit more time and provide pen extensions will really make PenWindows the optimum platform. That's Microsoft's selling pitch.

Ours has got to be completely different. Our system has been designed from the ground up as something that's been optimized for pen on glass. What it will allow is different applications from the Windows applications that exist today. This will allow smaller, focused, pen-optimized or mobile-optimized applications. Would a mobile worker want to use a spreadsheet as we traditionally know it today, under Windows or Mac, with pull-down menus and things like that? Or would it be a different metaphor?

We think two things. We think that the excitement of people creating something completely different than they've done before, really thinking through a mobile worker's metaphor, how they would use computing on the go, is an exciting thing for the developer community. And that thrill of creating something new and getting in on a new and exciting operating system is a great incentive for a lot of the smaller companies.

Just having come from Claris, I recognize that significant upgrades to products take eighteen months, and new applications take even more time. In contrast, PenPoint applications might have anywhere from 100K of code to 400K of code. We're thinking about exquisite applications being done in 100-200K of code, because this object-oriented operating system provides so much functionality and facility for developers to utilize.

So we see the time to market as a big advantage. Yes, it's not as easy as making a Windows application pen-compatible, but you could do a smaller, tighter, more focused—and therefore, we think, much more exquisite and acceptable—application under PenPoint by writing a small amount of code. Thinking through the conceptual design framework, the coding aspect of it should be considerably less time.

We think that you could get a great product out in PenPoint in eight to twelve months. The investment that a developer would make in our platform is significantly less than it might be in another. I don't want to make the case that it would be easier than doing a pen extension to Windows, but the fact is that I don't believe those applications will be optimized for mobile workers.

I go back to when we launched the Macintosh in 1984—Bill Gates stood up on a platform in Hawaii at an Apple sales meeting and said, "In software, volume is everything." Obviously with the acceptance of our system by OEMs and, we believe, the demand created, there will be volume of PenPoint machines out there that the developers can sell to.

How comparable are the challenges GO's facing now to those the Macintosh faced in 1984? It was also going up against an entrenched standard and also trying to evangelize a radically different concept.

I think the big-guy-versus-little guy juxtaposition exists today. Mac vs. IBM PC, GO vs. Microsoft. But the similarities end there.

First of all, Apple was a company, and it had an ongoing revenue stream from that wonderful thing called Apple II. So we were able to invest the profits from Apple II into launching a new platform—you remember that first hundred days we had of Macintosh, enormous multimillion dollars of advertising and public relations and developer tours and things like that.

Right now at GO, we are certainly much more resource-constrained. What we have to do is spend our time and effort on targeted marketing efforts. We've done a really good job with our developer/press conference, the introduction on January 22. We reached a lot of the industry influencers, who

are, in our thoughts, primarily the software developers and the hardware OEMs that will provide us with leverage.

Since that time we've focused a lot of our attention on dealing with probably a lot fewer people than Microsoft would be dealing with, but trying to approach them in a direct way, to see if we can't provide them with a partnership that will enable them to understand our system better and provide one of the things that we feel is a big advantage to our system—hardware-differentiated products.

Today if you see a PC on somebody's desk, you'd have to get pretty close to it to know whether it was an 8088 or a 286 or a 386 or whatever. In a scalable operating system, people could have devices as small as 3x5 cards and as large as that wallboard behind your head. People could innovate, and therefore be able to differentiate themselves that way. That's an advantage for us, we feel—that we're providing a hardware-differentiated opportunity for our developers.

But back to the similarities to the Mac—all those things that we've had to do we've had to target. We can't do mass advertising. We can't do mass launches or even mass mailings. Everything we're doing right now involves trying to work with the infrastructure in microcomputing as we know it today, to try to help them understand the value of our system. And if they can get some of the religious fervor of Jerry Kaplan and Robert Carr, they'll understand what a breakthrough in thinking this is and join with us to try to change the way people view computing.

That last part of it is a lot of what Steve Jobs did with the Mac. It was a new way of computing, and there are some things that are similar there. The Mac was a breakthrough in thinking about how to use a very horizontal computer. We think we're taking the next great step. We have the same task, but with a lot fewer resources.

How do you see yourselves relating to, say, GRiD, which already has the GRiDPAD running DOS but has committed to doing PenPoint machines?

Our view is that GRiD will be a very supportive partner.

I'll talk about another OEM that I visited—yes, they feel like from a customer demand standpoint, they're going to have to fulfill those demands with a PenWindows product, and on the other hand they feel like that will be a different class machine than something PenPoint would provide them the opportunity to create.

We're hoping that that's what happens with GRiD. If they see it that these are strictly interchangeable operating systems, let the customer vote, I think that's fine, I think that would be a good way to go. But if they feel like they could really use the functionality of our OS to create a different type of hardware platform, that's what we'd like, and that's what we're working to encourage them to do.

Speaking as somebody who missed character-based machines entirely and went straight from the typewriter to the Mac, I think there's some truth to the idea that the people who gravitated to the Mac were often fundamentally different from those who went for the PC. Do you see a similar thing happening here?

As far as the types of users are concerned, I don't think there was any question that the Macintosh brought new users into the marketplace. I think that was very obvious.

I think that the marketplace for GO's technology is, maybe, a different demographic group. The professional managerial type person that you personally represent are the people that were attracted by Macintosh; interestingly enough, the technical community bought into it first, and then the university students, and those were the three major constituencies that Apple was able to target.

In our case here at GO, the mobile professional has been one who has largely been ignored. I think that a notebook PC with a traditional keyboard is not something that is very logical for people that are truck drivers or meter readers or insurance claim agents or things like that to use. So that's a new group that we think we can bring into computing with these types of devices.

The second thing is that there are many people out there who are currently mobile users, who are using notebook or portable type computers, that have been unhappy with their ability. People like, for instance, you interviewing me—rather than using a notebook and a pen, you might use a notebook computer, because it would probably not be appropriate to sit here and type on a keyboard. With the communications architecture that we have provided, you could literally believe that the machine you were using right here while you were interviewing me could be a peripheral to your host, that when you went back you could get that information into your host, format it any way that you'd like, and output it to your LaserWriter just as you normally do.

One of the things I'd hear a lot from developers when the Mac first came out was that, in essence, the learning curve to go from the UNIX or DOS environment to the Mac environment was about a year, for an experienced programmer. You had to relearn everything from the ground up, and Apple's evangelists had a hard time with existing DOS developers for that reason.

And you forgot the hardest part—you had to buy a Lisa! [*laughs*]

It sounds like at GO you're springing a totally alien operating system on developers, but it also sounds like you're making it a lot easier for them to deal with.

There's no question. Developing in a familiar environment makes it pretty easy for them.

I think the biggest hurdle is still one that was a hurdle on the Mac—to do one application well. People could program on the Mac—you had to step through hoops and do Lisa, but if all you did was a straight port, you didn't sell very many.

Some of the innovative companies like Slate and PenSoft are doing some wonderful things because they've thought through this new mobile worker. They thought through what people want, so they can imagine the truck driver, the meter reader, the claims agent, those mobile workers, and they have provided an environment where, with some modest customization, they can have tools. Their company, no matter how small, can have tools that they're able to use to be able to do these things well.

How extensive is the real-people testing of the software?

We've done an enormous amount of usability testing here. It's not an easy thing to do.

We've had to work with the developers—like, for example, with Slate. If they provide a development environment, somebody, either an in-house or commercial developer or a VAR, really has to understand the utility needs of these customers.

Let's make the assumption that today there's an existing infrastructure called VARs. VAR, by its very nature, is vertical, so they understand the vertical needs of specific customers. What we've been able to do is work with the VARs, and they've been able to give us real-world feedback as to how these people would use their systems. So we've been able to use the VAR as a first link to the customer, and if they can conceptualize the metaphor, then we with our operating system and the VAR with their application can work with the end-user customer.

That brings up a further question—your distribution channel. Do you envision that pen-based computers are going to be an off-the-shelf product, or they're going to be mostly VAR-channel, or mostly direct sales?

I wouldn't want to speculate on behalf of our hardware vendors, because the OEMs are going to be the ones that are going to do that. I would say that the initial thrust will be vertical, but I think that the blade of that hockey stick is going to be pretty short, and I think it will become very horizontal.

I think even if a vertical-market worker found that the vertical application was extremely valuable, they would begin to find other things. It's like the old days—if you go back and think about the secretary who discovered word processing, word processing was an easy thing to learn, and then they had to go to the next step—mailmerge, and revision control, and output—things like that. So what will happen is that as mobile workers become interested in vertical applications, they'll find out "Oh, I could fax this information."

The original thrust of the microcomputer was the spreadsheet, VisiCalc on the Apple II, 1-2-3 on the PC. That was because it was vertical and logical—we wouldn't consider that financial analysis vertical today, but we did then. And so immediately people would say, "Well, if I can do that, why can't I do this?" Pretty soon those same people who were the spreadsheet jockeys started doing word processing.

So I don't know the distribution channel, but my guess is that it will go fairly quickly from direct sales to VARs to dealers, and it might happen instantaneously in all three of those channels.

Having seen the Sony Palmtop, I'm wondering if you're envisioning Kanji PenPoint, for instance, and other international versions.

No question. As we're preparing our release, we have been captivated by the promise of Unicode. Unicode is essentially an agreement among a number of software vendors to write a common standard of 16-bit code. That's what we're going to do, and you'll see a truly internationalized version from us in our second release. ■

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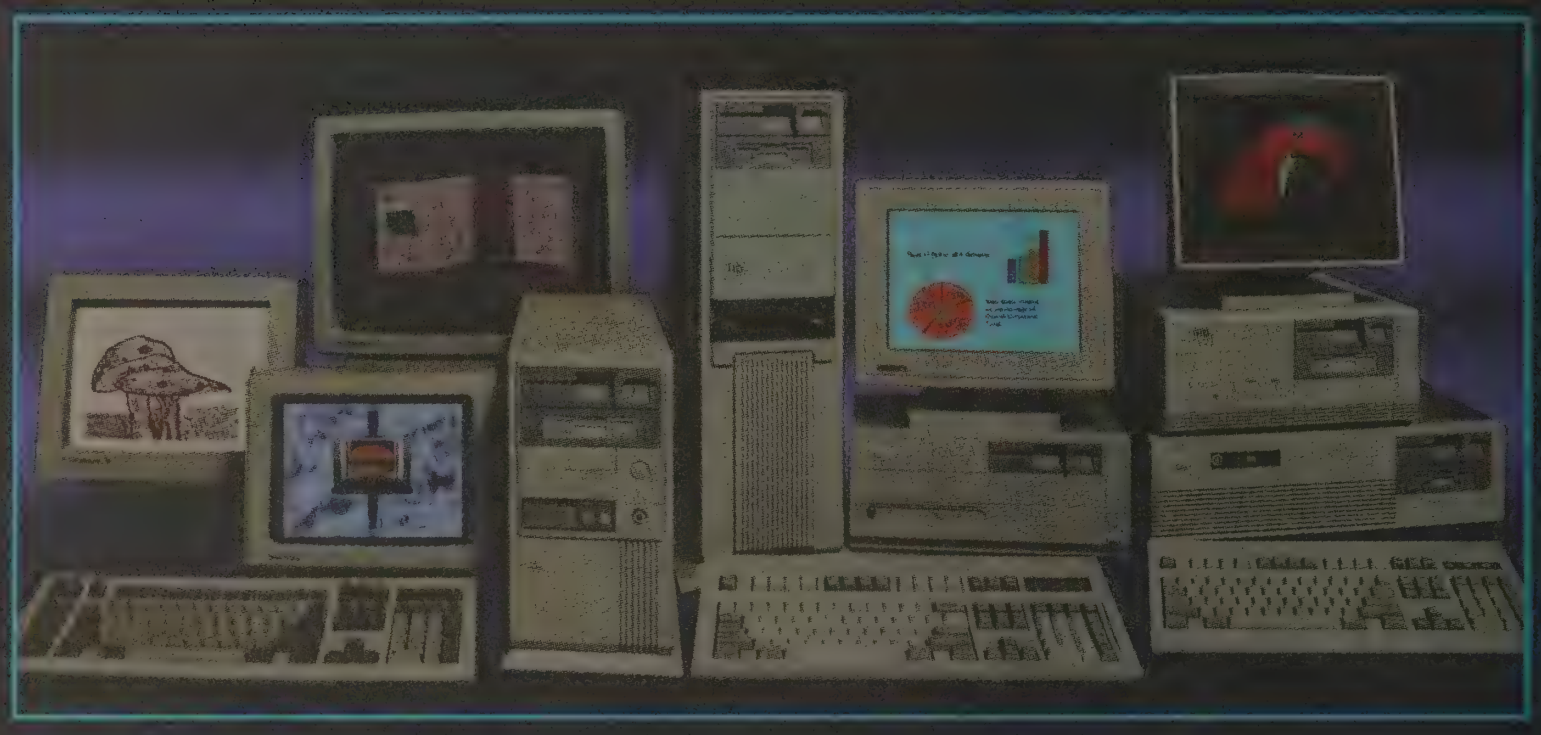

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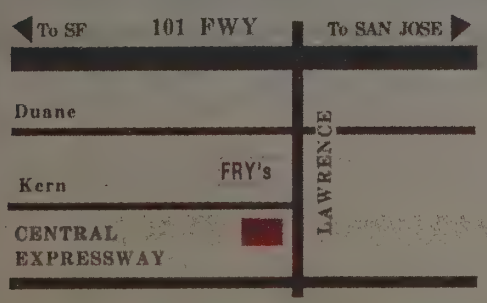

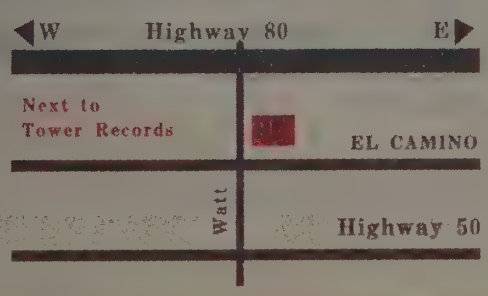

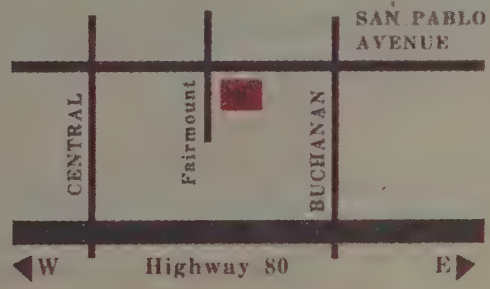

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Buying A Laptop PC

What To Consider

BY PAUL HOFFMAN

A few months ago I described many of the decisions you need to make when buying a PC clone. One factor was size: do you want a regular desktop PC or a laptop?

Laptops, historically referred to as portables, are a very different breed of clone. If you're thinking about buying a laptop, you have to answer many of the same questions that you did when you were buying a desktop PC, but you need to think about a few more issues as well.

LAPTOPS AND DESKTOPS: SIMILARITIES

Almost all of the laptop machines available are standard PC clones. There are a few Macintosh portables and a few UNIX portables, but by and large any laptop you see is a standard PC clone in a different box. They run MS-DOS software, they have disk drives, they have Intel CPUs, and they have ports. The biggest difference is that there are no slots in most portables.

Like desktop clones, laptops are available in all levels of speed and power. You can buy clones with 8088, 8086, 80286, 80386SX, 80386, and 80486 CPUs. You can buy laptops with as little as 512K of RAM, or as much as eight megabytes. Many laptops have one or two floppy drives, while others have hard disks. Older laptops have CGA monochrome screens, but most current laptops have VGA monochrome screens, and some even have VGA color (although this option is particularly expensive). Most laptops have keyboards with about eighty keys.

Most laptops have lots of ports on the back or side so you can hook them to peripherals when you're not on the road. These days, an external monitor port is almost a requirement. This lets you use a real monitor instead of the screen on the laptop when you are in an office. Most laptops come with a standard printer port, and some come with serial ports. Some laptops have external drive connectors, but most of these are non-standard and only hook to drives made by the laptop maker or a few mail order houses.

Since laptops were originally marketed for use on the road, many of them come with modems built in. In this case, there are also one or two phone jacks on the back of the system. Other manufacturers sell modems that can be installed internally in their portables. Many don't have any option for an internal modem but do have a serial port, so you can always buy one of those tiny pocket modems. This is the least attractive option, but not usually that much of a bother for laptop users.

DO YOU WANT A LAPTOP AT ALL?

If laptops are smaller than desktop PCs and have most of the same features, you'd imagine that everyone would buy laptops instead of desktop PCs. Obviously, that's not happening, and there must be some drawbacks to laptops that keep them at under 10% of the clone market.

Actually, there are many negative features, some of them fatal for most buyers who wind up with desktop machines. Don't be dismayed as you read this list, though, since many laptop users swear by their systems, and the market share of laptops is growing every year.

The most obvious problem with laptops is their price. A laptop can easily cost twice as much as a similarly powered desktop PC. That's a hefty markup for a package that looks like a lot less. For example, a typical laptop with an 80386SX CPU running at 20 MHz (the faster speed for these CPUs), 1MB of RAM, one floppy drive and a 20MB hard disk costs about $2,500. A comparable desktop from the same store might cost $1,500. A difference of $1,000 is significant for many buyers.

The price percentage difference is even bigger for lower-end laptops. An 8086-based laptop with no hard disk costs around $1200; a desktop would be closer to $500. At this level, you can buy two desktop PCs for the price of one laptop. For small offices or a department with a limited computer budget, this makes laptop computers look like luxuries. The price of laptops is coming down, of course, but only about as fast as the price of desktop PCs.

Laptops cost much more than their

If you intend to use it on airplanes or buses, you certainly need a laptop with batteries. On the other hand, if you will only be using it in hotel rooms and other people's offices, you don't need batteries and can probably save yourself weight and money by getting an AC-only system.

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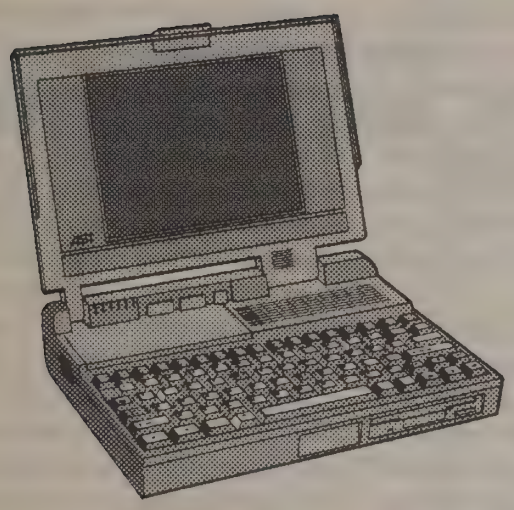

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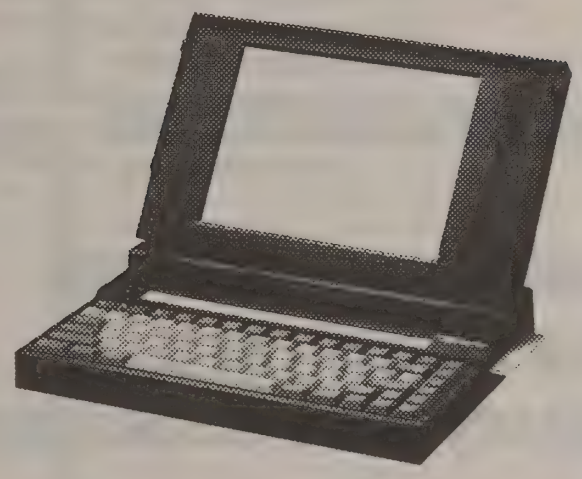

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equivalent desktop models for many reasons. First and foremost, it costs more to buy the chips that go into laptops than it does for the chips in full-sized computers. You have much less space for the chips in laptops, so the chips have to do many more things per square inch. These hyper-dense chips cost more, even though you need fewer of them per computer. You'd think that because the screen on a laptop is small and flat that it would be cheaper than a big monitor, but just the opposite is true: high-quality flat screens (usually called "flat panel screens") cost more than most monochrome monitors. The hard disks in laptops are also more expensive than their larger brethren, since smaller devices cost more to make and have higher failure rates.

One of the laptop's best features is also a drawback for many people. In order to make the system small, everything has to be small.

A laptop can easily cost twice as much as a similarly powered desktop PC.

A laptop is only as small as all of its parts put together. All laptops have tiny, cramped keyboards, often half the size of keyboards on standard PCs. Many people find it difficult to type on a laptop. Almost every laptop has the function keys across the top of the keyboard and no numeric keypad. The cursor control keys are usually along the bottom row of keys, making them very difficult to use without looking at them. The keys on most laptop keyboards are smaller than standard PC keys, and the Shift and Control keys are usually the size of regular keys, making them easier to miss.

An additional keyboard problem with laptops is that the keys are usually higher than they are on standard keyboards. Even though the difference is an inch or less, it's enough to make many people uncomfortable when typing. If you're going to type all day on a computer, you certainly want to be comfortable. Laptop owners can get used to the keyboard, especially if they're using the laptop exclusively, but they usually have to hold their fingers closer together and keep their hands more tensed.

The last major problem with laptops is that the screens are not nearly as easy to read as regular computer screens. The way that characters are put up on a flat panel screen is very different than on regular PC monitors. On a standard PC, electrons are shot at a phosphor screen that glows; on a flat panel screen, dots on the screen are turned black or clear. Most good flat panel screens use "backlighting" to make the black dots look more black, but others don't. Even with backlighting, your angle of viewing significantly affects the contrast you see on the screen. The better the screen, the less difference the angle makes, allowing you some freedom of head movement.

Different screens do better or worse under different lighting conditions. A laptop that works great in an office with fluorescent lights may be almost unreadable in a hotel room with a lamp next to the computer. The same machine might be fine if the lamp is behind you, though. Or it may be unusable if the sun is coming through the window. Even the best flat panel displays are much more variable than the cheapest PC monitor, and you can be assured that the best flat panel screens can add hundreds of dollars to the price of a laptop.

The concept of "portable" is also subjective with many laptops. Only two years ago, the average laptop weighed twelve pounds. This is certainly a lot less than a standard PC, but many laptop owners found one arm growing longer than the other one after lugging their computer around from site to site. Newer laptops are in the five to seven pound range, which is much more manageable. A lot of the weight of a laptop is in the battery if there is one: dropping the battery can drop a few pounds off the system.

YOU WANT ONE. NOW WHAT?

Of course, these disadvantages can't be so overwhelming, or no one would buy a laptop. There are many reasons why laptops are attractive even with these drawbacks.

The most important reason many people buy laptops is that you can't travel with regular PCs. They are huge and bulky, and unless you are Arnold Schwarzenegger, you cannot carry both the system unit and the monitor at the same time. Lugging a laptop might not be as easy as carrying a briefcase full of papers, but it is certainly not that difficult for short stretches, e.g., from the airplane to the rental car.

When people go on the road, they often need to do their work as they travel. A laptop gives them the freedom to have a word processor, an electronic appointment calendar, and a spreadsheet with them at all times. They can probably log in to the company computer to get electronic mail, or at least use a remote service such as CompuServe for messages. A laptop frees them from having to do everything on paper and transcribing when they get back home.

One of the most overlooked issues is where the laptop will be used. If you intend to use it on airplanes or buses, you certainly need a laptop with batteries. On the other hand, if you will only be using it in hotel rooms and other people's offices, you don't need batteries and can probably save yourself many pounds by getting an AC-only system. AC-only systems are also less expensive, since they don't need to use chips that are power-conserving. Most laptops today come with batteries, but manufacturers are paying more attention to users who will forego the battery for less weight and cost.

Another important factor to consider is speed. A floppy-only laptop is a great deal slower than one with a hard disk. It is almost impossible to use a word processor on a floppy-only laptop system—the disk drives are usually slower than those on regular systems. This is unfortunate, since laptops with hard disks are much more expensive than those without. If you have a floppy-only laptop with a megabyte of RAM, you might be able to put the program on a RAM disk to reduce demand on the floppy, but this is difficult with today's popular word processors. Appointment calendars are usually RAM-based, so this is not as much of a concern. If you only run lightweight programs, you can probably get away with a floppy-only system.

WHAT TO BUY AND WHERE

After you have looked at all your needs and decided what you can afford, you still need to pick a model and a dealer. There are lots of brand-name laptops from companies like Compaq and Toshiba, as well as no-name clones. From the tests and from many people's comments, Compaq seems to have the highest quality and price, but after that it is catch as catch can. Most of the brand-name laptops are made in Japan or Taiwan, and some of the American-branded laptops are manufactured overseas as well.

When you decide on a store to buy from, be sure that they have a good service department and that they can service the brand you buy. The average name-brand laptop has many more problems than the average name-brand desktop since it gets banged around much more and because the parts are not as well tested as desktop parts. If your dealer has to send the machine out to get it fixed, you can easily spend a week without your computer. Of course, since price is important too, you want to find a dealer who sells in quantity so that he or she has low prices and is familiar with problems that might come up. ■

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Database And Change

Research, Online And Otherwise, For $5 Or Less

BY BROCK N. MEEKS

Lynn Eggett of Oakland recently threw me a metaphorical gauntlet in the form of a well-reasoned letter, in which she challenged me to give her a good enough reason to use her modem. "So this is columnist hell," I muttered.

Eggett writes that she's had her modem for eighteen months and used it ten times, tops. She's a typical *MicroTimes* reader: her main criterion for using her modem (and by extension, the online industry as a whole) is that it "be within the financial range of an everyday, tax-eaten American."

EMAIL AND THE SMALL BUSINESS

In her self-owned business she uses the computer for sales analysis, word processing, etc. Her business is regionalized. For her, she says, an electronic mail service such as MCI is usually unnecessary and too expensive when she needs it.

Eggett misses the point by looking only at the base rates for MCI Mail ($2.00 for a typical four-page business letter, laser printed and delivered by the US Post Office). Granted, when you can send that same letter for a mere 29 cents, it doesn't seem to make much sense to spend $2 to accomplish the same task. Unless, of course, you factor in the cost of your own time.

Let's break down the cost of sending a letter via MCI Mail versus sending that same letter through the post office.

The process of drafting the letter, spell checking, and proofreading it is the same as what it would take to send the letter via MCI Mail. So far, the costs are equal.

Now Eggett has to go through the process of inserting paper in the letter-quality printer, then printing the letter. Next, she has to insert the envelope and print it.

Now she has to fold and insert the letter and place a stamp on it, and take it out to the mailbox. Total elapsed time from printer to mailbox: ten minutes. That ten minutes just cost her $3.30, assuming that her time is worth at least $20 per hour.

Using MCI Mail, that letter can be uploaded and on its way in under two minutes, or for about 66 cents in "real" costs in terms of her time.

Bottom line: MCI Mail letter—$2.66, US Postal letter—$3.59. Score one for technology.

RESEARCH AND THE AVERAGE AMERICAN

Eggett's letter (handwritten, I might add) moves quickly from her business woes to those of her children. Using the modem for "practical uses—namely kids' and high school reports" is "another crash-and-burn prospect," according to Eggett.

She says that her son was recently researching a report on the effects of the atomic bomb on Hiroshima. She details her son's dismal search for information in the local library. Result: a two-column spread in the encyclopedia and two novels.

"Enter CompuServe, right?" she asks. "Not at $35 per search! CompuServe doesn't even get invited in!"

She then goes on to challenge me to provide some "real practicality" and find her an affordable "group of information sources." But there's a kicker: "Do it all for five bucks or less!" Like I said, columnist hell. Actually, there's nothing better than a good challenge. I accept.

Some of the information sources I'll list below will be "audiotex services." Audiotex is merely information delivered via a recorded message. True, such information sources aren't "online" as we usually think of them here, that is, accessible via modem. However, by virtue of being delivered via the telephone system, they are, in fact, "online."

And though you can't download audiotex information, it's a rather simple matter to record that information on a portable tape recorder using a $3 suction cup recording device available at any electronics store.

COMMERCIAL SERVICES

A word about commercial services. They aren't as expensive as they seem. The trick is to know exactly where to go and what kind of information you want before you go online. This way you can make efficient use of your

Commercial services aren't as expensive as they seem. The trick is to know exactly where to go and what kind of information you want before you go online. This way you can make efficient use of your time online and not waste it merely wandering around.

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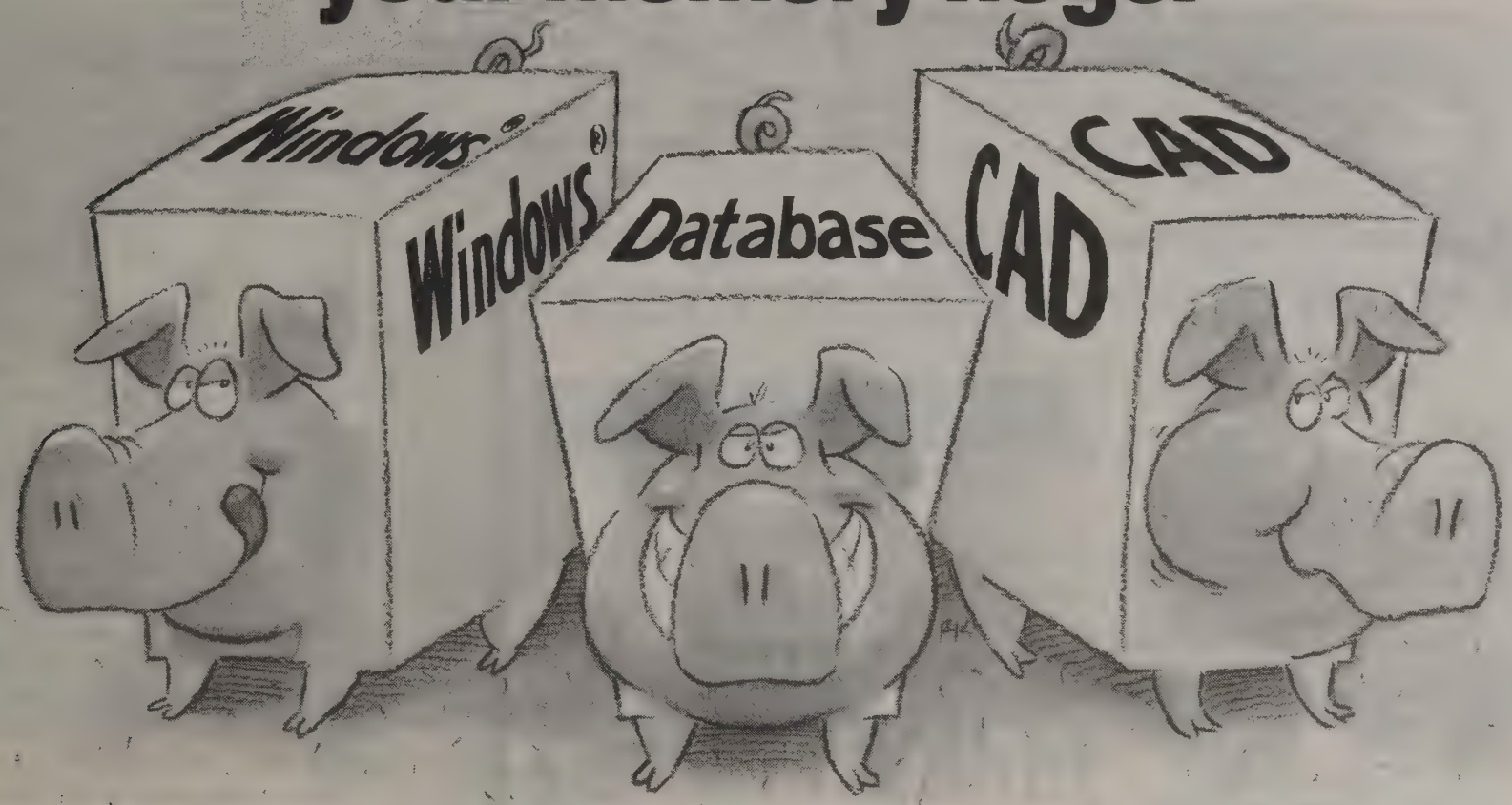

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time online and not waste it merely wandering around.

As an example of how effective this "preselection" strategy can be, I'll use Eggett's son's report as an example.

On CompuServe, one of the nation's most respected researchers and "infomaniacs" is at your beck and call. His name is Matthew Lesko and he sponsors a service called the "Electronic Answer Man."

Eggett's son need only compose his question offline and upload it to Lesko via CompuServe's email system. (To reach Lesko you have to enter "go infousa" at the CompuServe "!" prompt.) The uploading process should take a couple of minutes, tops, if you figure in logging in, navigation time to the email and typing in a subject header and address. Assuming Eggett is using a 2400-bps modem, sending her son's question costs 40 cents.

In a few days Lesko will have an answer on where to look uploaded to Eggett's electronic mail box. Downloading the message takes another two minutes (another 40 cents). Total cost for the services of one of the nation's leading experts: 80 cents. Now that's a deal!

Here's how Lesko handled a research question uploaded from a student who needed to write a paper on aid to Central America:

"Over three hundred PhDs on Capitol Hill produce reports on over four hundred subjects, each of which is updated daily. Contact your Member of Congress and ask for a copy of the following three CRS Issue Briefs: 'Central American & US Foreign Assistance'; 'Central America: A Regional Overview'; and 'Central America: US Economic and Military Assistance.'"

I'll bet the kid gets an A.

And just for future reference, should Eggett's son want to make a dramatic impact during show and tell, he might consider this answer from Lesko to someone who wanted to get an astronaut to speak at their next meeting:

"There are several hundred astronauts around the country that are available to speak to groups for free. The National Aeronautics and Space Administration is able to fill most requests. To make the necessary arrangements contact Mrs. Tawana Clary, Public Services, Special Events Branch, NASA Headquarters (Code LFF), Washington, DC 20546, (202)453-8315."

AUDIOTEX SERVICES

There are literally thousands of audiotex services available at the price of a long-distance phone call. If you make that call after the rates drop at night, it'll cost you less than $3.

Since the government is the world's largest gatherer of information, below I've listed a sampling of their audiotex numbers. Just how useful are such services? Well, thousands of reporters, from the *Wall Street Journal* to the *New York Times* call these numbers every day just to keep their fingers on the pulse of the nation.

Commerce, Department of News Highlights: (202)393-1847

Education Resource Information Center (ERIC): (202)357-6289

Federal Communications Commission, News: (202)632-0002.

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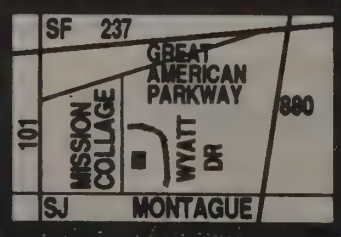

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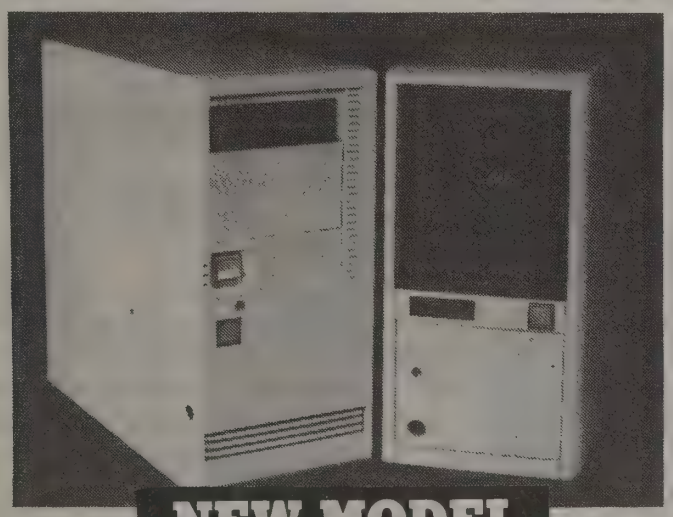

NEW MODEL

MODEL: 201 & 203

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President's Voice Announcing News Items: (202)456-7198 in DC area, 800-424-9090 elsewhere.

DATA BASE BOOM

There are some 3,000 data bases maintained by our government. Although these data bases can be accessed by government contractors or consultants, the general public is, unfortunately, not allowed access to most of them. This is due, in part, to certain privacy restrictions. But all is not lost.

Government agencies are sensitive to the need of the public to have access to information stored in its computers. If you have a specific research need, and have some kind of expertise in the field, you might be allowed special access to the data base simply by making a written request to the agency.

But what about the casual user, such as Eggett? What can she do to tap this huge storehouse of information? Easy. Let the civil servants do their job and search their data base for you. This process isn't much different than having your local librarian help you look for a certain book.

The following data bases allow you to call and request specific information. A printout will be sent to you, usually for the cost of photocopying.

In keeping with Eggett's "bottom line" of $5 a search, here's a sampling of what's available:

Clearinghouse on Health Indexes, Office of Analysis and Epidemiology, 3700 East-West Highway, Room 27, Hyattsville, MD 20782; (301)436-7035.

This data base contains bibliographic citations and abstracts of literature about health indexes. "Health indexes" refers to the overall health of an individual group, and concerns measures of health, not disease.

Examples of topics covered include: number of cancer deaths, life expectancy, quality of life, etc. The data base contains materials from multidisciplinary fields such as sociology, psychology, economics, and political science. Searches and printouts are free of charge.

Consumer Education Research Network, Consumer Information Center, Government Services Administration, Room KHC, Washington, D.C. 20405; (202)501-1794.

This data base is a high-powered version of *Consumer Reports* magazine. It includes consumer-education materials such as textbooks, reports, research studies, master's theses and conference proceedings. Searches are bibliographic citations and are free of charge.

Marshall Space Flight Center Index, Technology Utilization Office, George C. Marshall Space Flight Center, Huntsville, AL 35812; (205)453-2223.

With interest in the space program on the upswing, this data base can provide information to those interested in "associated technologies" developed as a result of space research. Information includes bibliographic citations and abstracts of all documents pertaining to the various technologies that have been developed at the center.

Searches, printouts and any documents it has are free of charge. ■

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FUNNELS & BUCKETS (183)-Great learning game for kids!!
ANIMALS (182)-Math for kids.
IQ BUILDER (184)-Test IQ or build one. Great for teaching.
EDUCATE (502)-Disk jammed w/programs to teach kids math, English, Vocab, etc. Requires Basic.
SPANISH (464)-Spanish tutorial w/quizzes, multiple choice, etc.
FRENCH 2 V.1.1 (426)-After the basics, move to the 2nd level of French.
MAP (189)-Learn about the U.S., geography & Capitols. Great Graphics. Requires Basic.
AMY'S FIRST PRIMER (181)-6 delightful programs to teach the alphabet, numbers, shapes, colors, counting, problem solving, & more. Ages 4-8. Requires Basic.

HOME

FAMILY TREE (521)-Explore your family roots, descendants, family groups & more. Fully menu driven.
BIBLE Q (410)-Test your knowledge of the Bible. Great for studies.
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CITY DESK V.7.1. (177)-Full featured desktop publishing system. Very Good!
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WORDPERFECT 5.0 TUTORIAL (485,486)-WordPerfect tutorial learning system. Become an expert at WordPerfect!!
SLIC WORKS V.1.0-(525)-Powerful spreadsheet, database, word processor & communications program. FrameWork Clone.

UTILITIES

PD-SIDEWAYS (292)-Prints a file sideways on an Epson printer.
HP SOFT FONTS (298)-Laser fonts for HP LaserJet+.
AT UTILITIES (308)-Very useful utilities for your PC/AT.
BAKER'S DOZEN (311)-Buttonware's 12 best utilities.
AUTOMAXX V.2.2 (309)-Menu system & DOS Manager.
PC-FILE III V.4.0 (319)-Jim Button's file management system. Just about the best!!!
DIRECTORY SCANNER V.3.0 (314)-Xtree clone. DOS Shell.
PRO-MAN (326)-Very good hard disk management program.
EPSONSET (296)-Downloadable fonts for your Epson.
PRINTMASTER TO PRINTSHOP (237)-Convert PM to PS or vice versa.
LASERJET FONTS #2 (376)-Contains 10 point Roman & Helvetica fonts in bold & italic. Includes downloader program.

GAMES

YAHTZEE & PHRASE CRAZE (370)-2 great classics games.
LAS VEGAS (501)-Vegas games of skill.
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TAPPER (216)-Keep the beer flowin'. Also 2 other games.
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BLACKJACK STRATEGY (201)-Not just a game. Learn Vegas strategy.
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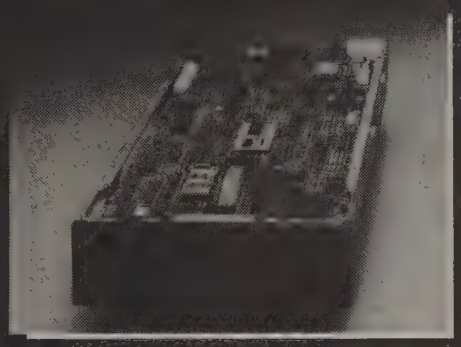

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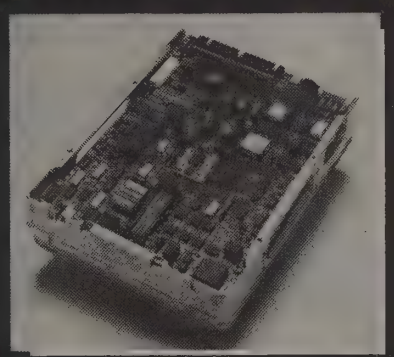

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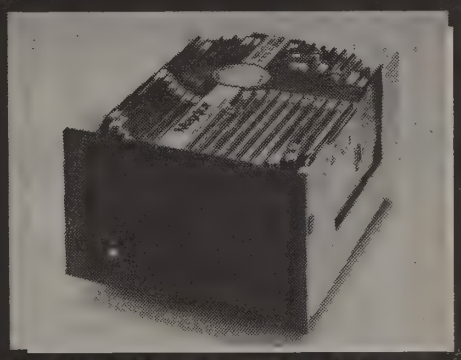

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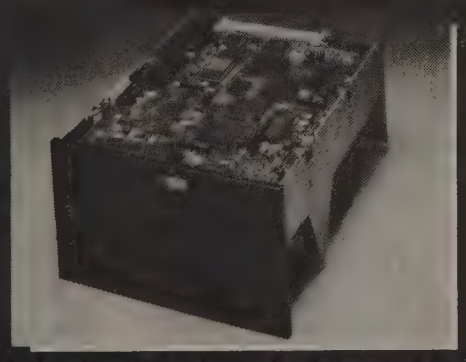

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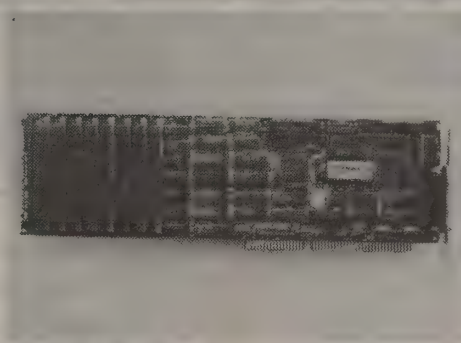

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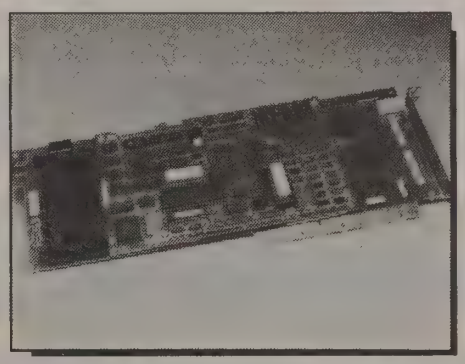

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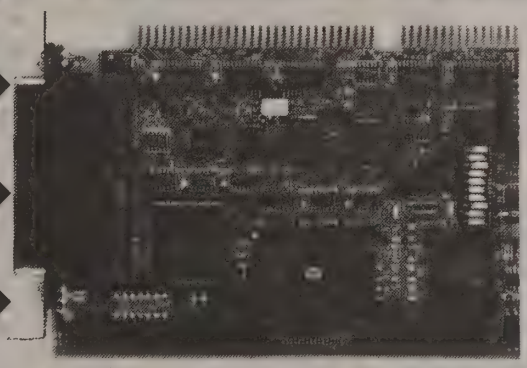

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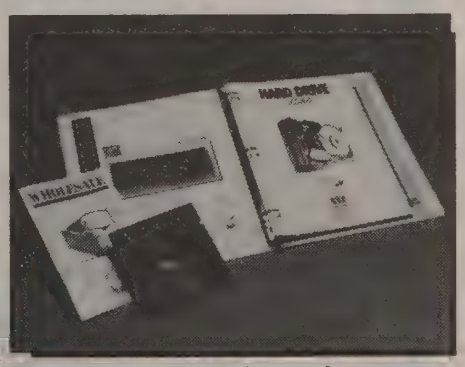

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The Road Mac Communicates

Faxmodem And Printer For The Macintosh Portable

BY MARY EISENHART

We Mac Portable users are discovering what our PC-using colleagues have known for some time now—portable computing is full of options and tradeoffs, to say nothing of tantalizing possibilities frustratingly close to realization. And while much desktop-bound computing takes place in a fairly conventional setting, portable computing is done on airplanes, beaches, hotel desks, and factory floors. No single solution is going to be right for all users.

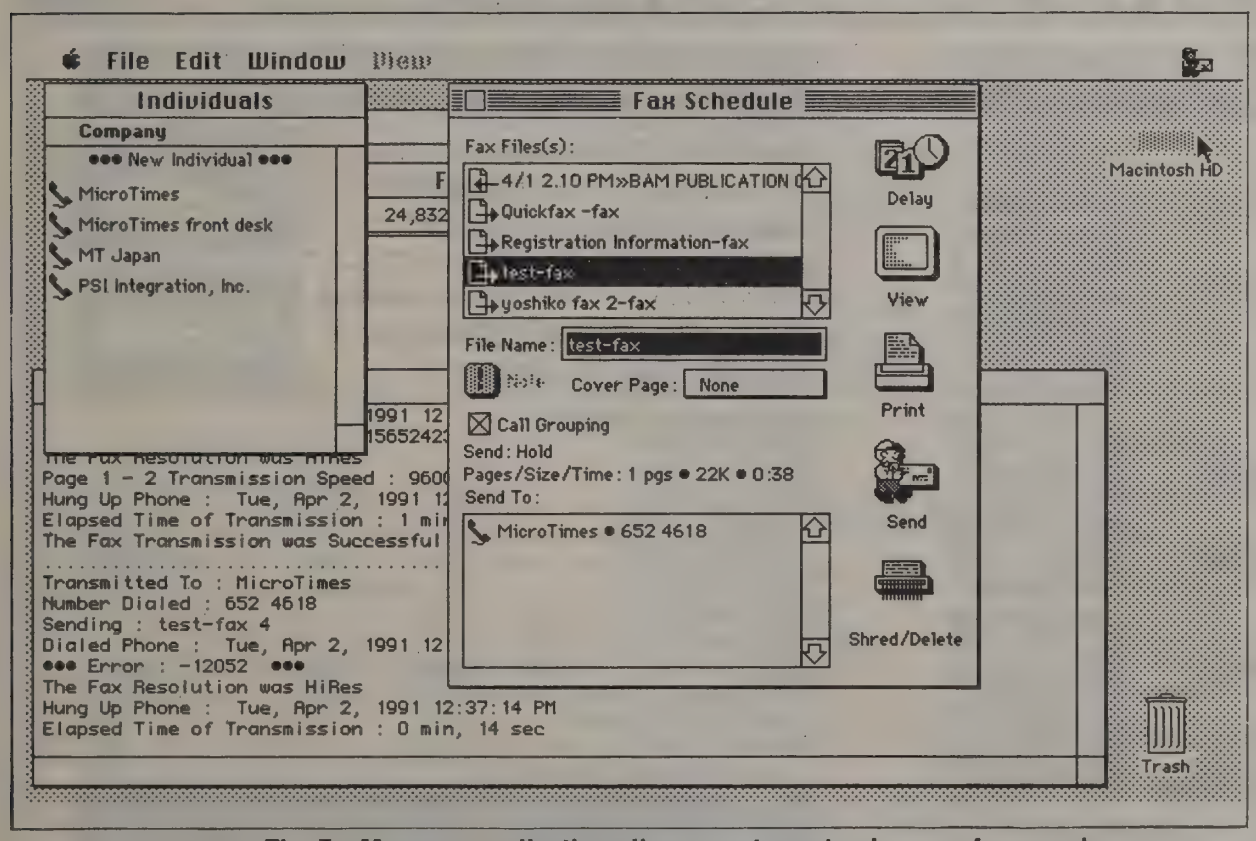
If you've invested in a Mac Portable, you're probably fairly committed to using the machine as a serious tool—if all you want is a calculator or a digital address book, you have plenty of other, and cheaper, options. However, if what you do on your desktop Mac involves a lot of fax, modem, and printer use, you'll really miss those tools when you go on the road. Some third-party vendors have created products to address your needs—here's a look at two of them.

DICONIX M150 PRINTER

When it comes to printers, the mobile professional tends to have a fair number of alternatives to actually buying one and carrying it around. I've found, for instance, that about half the time I've got the Portable in an office with existing Mac networks, so it's easy to just plug in and send documents to the network's printers. In other situations, e.g. making copies of meeting notes, I've got to go to the laser parlor to make copies anyhow, so it's just as easy to bring the disk along.

However, if you're on a plane and need a quick printout, or in the office of a client who wants it in writing, or, perhaps, in need of hard copy while miles from the nearest electrical outlet, these solutions are of no use to you. You need a printer. And you're about to discover what all those PC portable users have been wailing about for quite a while now—nobody's come up with a notebook-sized LaserWriter yet.

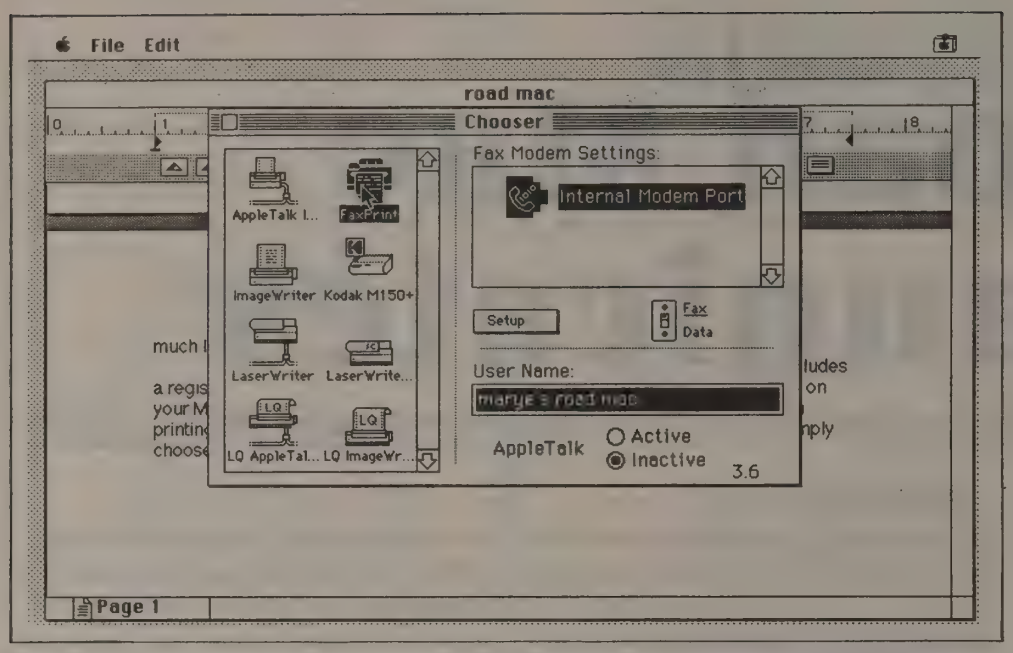
Kodak's Diconix printers have been popular in the PC world for some time, and a Macintosh version appeared last year. They're a marvel of compact design, their footprint being rather smaller than a sheet of 8 1/2 x 11 paper, and at 3.1 pounds they're considerably less backbreaking than the Portable. The Portable will not fit in your



The FaxManager application allows you to customize your faxes and track their progress.

When it comes to printers, the mobile professional tends to have a fair number of alternatives to actually buying one and carrying it around.

briefcase; this printer will. It appears, however, to be just slightly too large to fit comfortably in the Portable's own case. The printer comes with its own AC power adapter; if you want to run it on battery power, you'll have to buy five C-size rechargeables. The Diconix is about as unob-



Sending a fax is as simple as selecting FaxPrint in the Chooser, then printing your document from inside your application.

trusive as printers get—in addition to its small size, it's very quiet.

The Diconix is an inkjet printer, and you'll improve the appearance of your output considerably if you use inkjet paper with it—as with all such printers, the ink tends to smear on the paper you'd use in your ImageWriter. It accepts both pinfeed and single-sheet paper. Adobe Type Manager is bundled with the printer, resulting in smoother fonts and better-looking output. Graphics come out clear and beautiful.

In general, the quality of output is not as good as you'd get from a LaserWriter but, particularly in Quality mode, clearer and sharper than you'd get from an ImageWriter. The Diconix supports US Letter, US Legal, A4, and International Fanfold formats; it's not designed for, say, mailing labels or envelopes. Since most portable printing seems to be oriented toward producing short memos and other ad hoc documents, this is probably not crucial for most applications, but you should be aware of this limitation if you're planning to make it your only printer. Another limitation, for some purposes, is that there's a definite speed/quality tradeoff: Quality printing is noticeably slower than its ImageWriter counterpart, Draft roughly comparable.

If you're a Portable user (or any other Mac user) who needs a compact printer to take from site to site, the Diconix is a good choice, widely available and supported.

THE COMPORT FAX/MODEM

In a lot of business settings, you're a lot more likely to encounter a fax machine than a modem; people who are positively phobic about email and online services use a fax dozens of times a day. Some years ago, hardware vendors decided that faxmodems, that is, modems with both data and fax capabilities, would be a versatile tool for the business user.

And indeed they are, but I've yet to run into a faxmodem user who doesn't burst into frustrated diatribes at the current state of technol-

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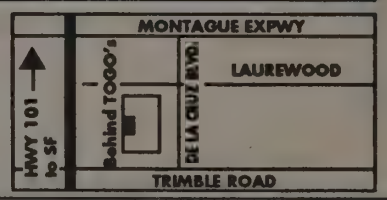

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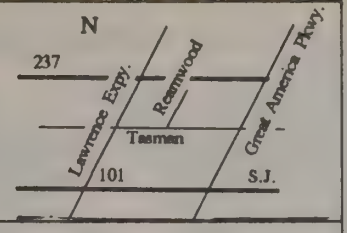

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- *286-20 Motherboard
- *IDE Controller
- *101 AT Keyboard
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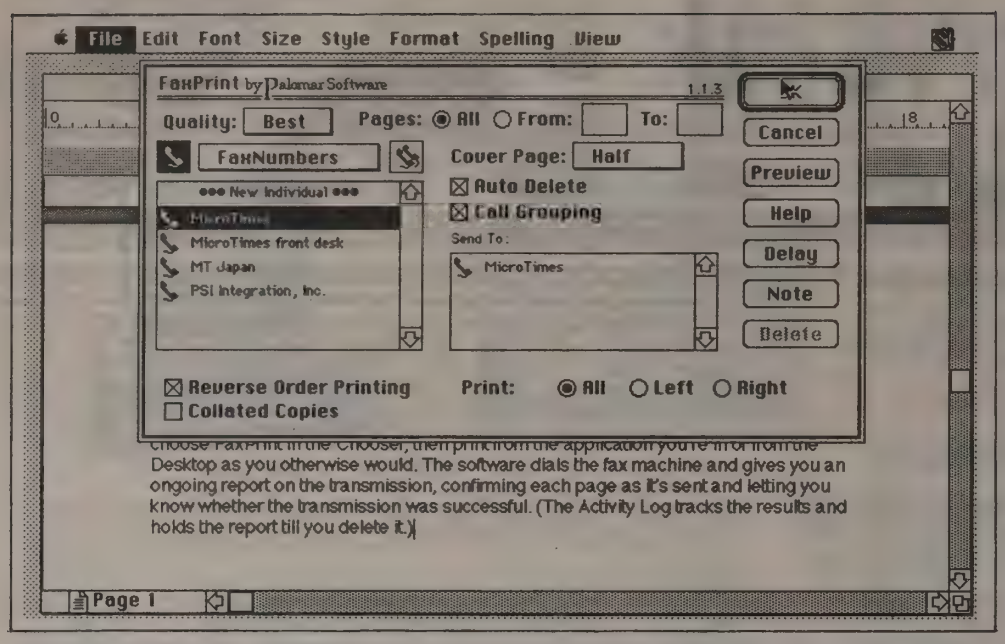
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Desktop as you otherwise would. The software dials the fax machine and gives you an ongoing report on the transmission, confirming each page as it's sent and letting you know whether the transmission was successful. (The Activity Log tracks the results and holds the report till you delete it.)
Page 1

You can switch the COMPORT from fax to data mode in the Chooser, then use it with your telecommunications packages to retrieve your email and dial up online services.

ogy. Unless you have either a NeXT or a lot of OCR equipment, for instance, you're probably not going to be able to import a faxed document into your word processor and edit it. For some purposes, that doesn't matter; in other situations it's crippling.

Another problem that isn't unique to computer-based faxing is that you encounter all manner of glitches in attempting to transmit or receive a message, and it's all too rare that you ever find out the reason—e.g. the receiving machine ran out of paper, it persistently refused to answer, etc. In the course of working with PSI's COMPORT faxmodem, for instance, I never did succeed in getting our office's main fax to respond to it. Never mind that the same machine would transmit to the faxmodem with beautiful clarity. Never mind that other people (including PSI's tech support) have never had any trouble connecting with the same fax machine, from faxmodems or otherwise. Never mind that the faxmodem connected happily with other office faxes and sent a MacWrite document with graphics to Japan.

However, that said, it's my personal experience that the most value-enhancing thing you can do for your Portable is get it a faxmodem, and the COMPORT from PSI is a good one. The package consists of the faxmodem itself, on a card that fits into the Portable's modem slot, and software for creating, receiving, and tracking faxes. The Portable I used had a 40MB hard disk and two megabytes of RAM, and the software will probably work best with this configuration—while the FaxStatus DA that keeps you informed of a transmission's progress is not particularly memory-hungry, the larger FaxManager application (which includes an activity log, various configuration options from transmission retries to auto-shredding of old documents, and other tools to make your computer-faxing fit your particular work style) wants 800K of RAM and won't settle for much less. If you plan to fax a lot of documents generated by memory-hungry applications, you might want to think about more RAM.

You can send and receive faxes at speeds up to 9600 baud; the COMPORT supports both low- and high-resolution modes, depend-

Continued on page 214

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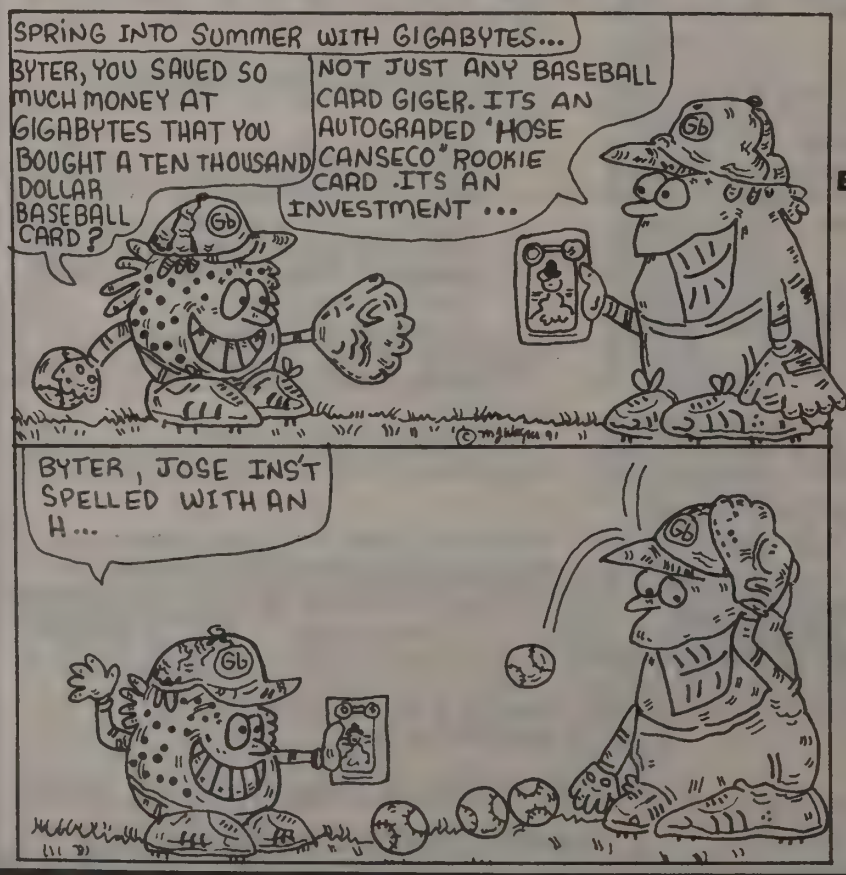
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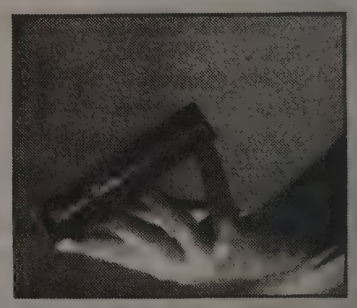

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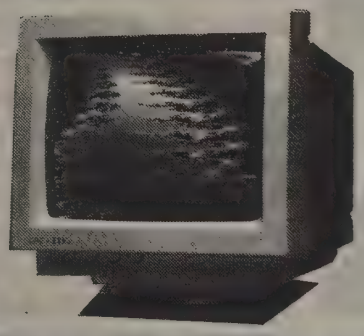

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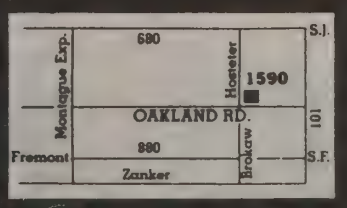

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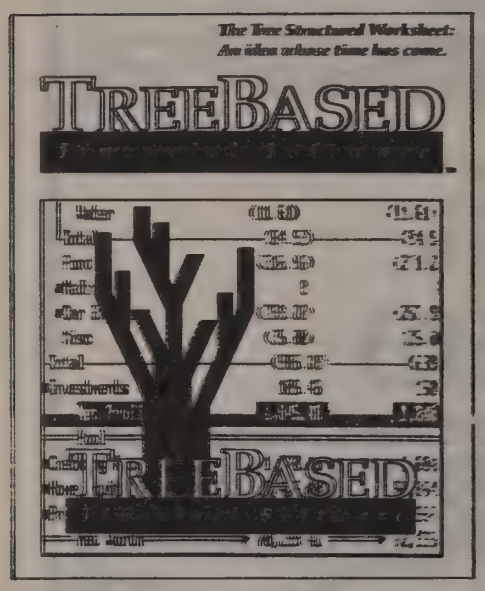

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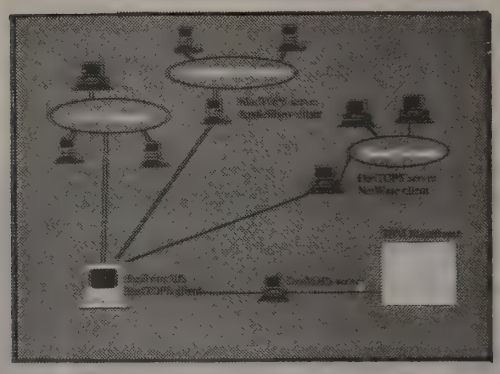
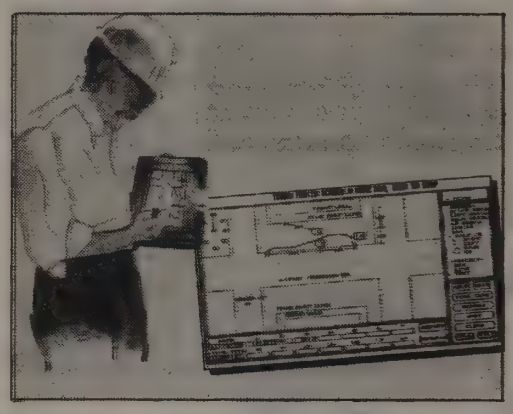


TOPS FILE SHARING FOR PENPOINT

Sitka TOPS networking technology has been licensed by GO Corp. to support cross-platform file-sharing with the PenPoint operating system. The PenPoint TOPS client software will give PenPoint users seamless access to files and printers available on TOPS servers—MS-DOS or Macintosh-based. Users will also have access to Novell NetWare, IBM LAN Server, or Banyan VINES. The agreement to license TOPS technology to GO includes Sitka's SoftTalk. SoftTalk is the remote procedure session mechanism that provides a foundation for Sitka's own TOPS products and those developed by third parties. Sitka Corp., 950 Marina Village Pkwy., Alameda, CA 94501. (415)769-9669.

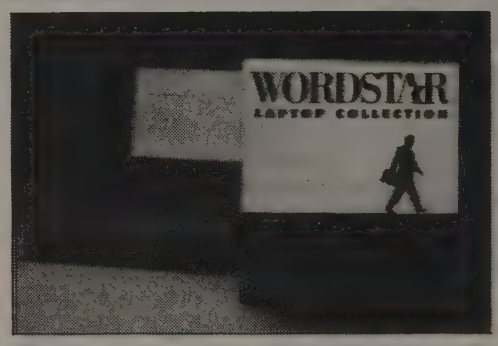
HANSEN SOFTWARE INTRODUCES PENPOINT APPLICATIONS

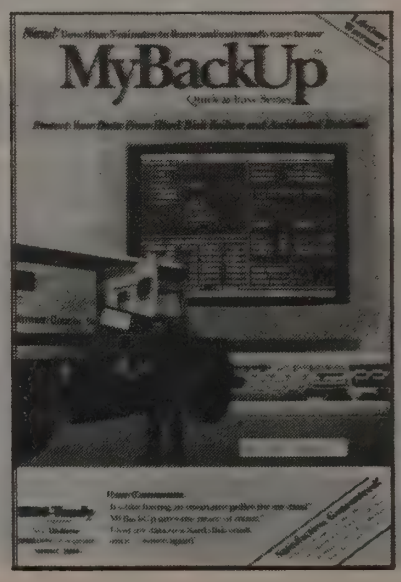
Hansen Software has begun developing applications based on the GO PenPoint operating system. Building upon its experience with the GRiDPAD, Hansen Software's pen-based applications represent an important new approach for gathering information in the field. Field personnel can create, edit, and manipulate information on a flat LCD screen, and can use the system while standing, walking, or in-transit. Hansen Software, Inc., 1745 Markston Rd., Sacramento, CA 95825.



WORDSTAR LAPTOP COLLECTION

The new software bundle from WordStar includes WordStar Edition, Traveling Software's LapLink Special Edition, and Campbell Services' OnTime. WordStar Edition is a special laptop version of WordStar 6.0, including TelMerge telecommunications software that lets users access data from distant hosts and electronic information services. LapLink Special Edition, a condensed version of LapLink III, enables easy file exchange between laptop and desktop computers. OnTime is a full-featured calendar and scheduling program for planning and tracking dates, events, and tasks. ($295, Registered WordStar users can get the WordStar Laptop Collection for $89.95) WordStar International Inc., 201 Alameda Del Prado, Novato, CA 94549. (415)382-8000.





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- **PHOENIX BIOS:**
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- **80387 AND WEITEK SUPPORT**
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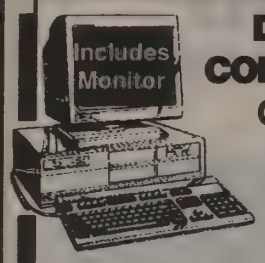

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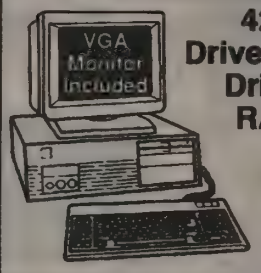

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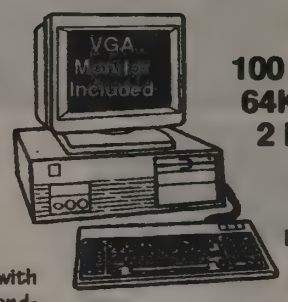
Complete System Includes MS-DOS

UR/OMNITEL 386-SX20



2 MB RAM, 80 MB Hard Drive, 64K Static RAM Cache, 2 Floppy Drives, & VGA Color Monitor

A truly superb computer with tremendous speed (28 Landmark) and outstanding new features. Complete with 2 Teac floppy drives, game, parallel, and 2 serial ports. This outstanding computer is housed in a small footprint case, and offers your choice of excellent keyboards.

$1999 $100 Month

Complete Systems Includes MS-DOS

UR/MYLEX 25 MHZ 386

100 MB HD, 4MB RAM, 64K Static RAM Cache, 2 Floppy Drives, VGA Color Monitor

Here's a lot of computer for a very sharp price. Based on the excellent Mylex 8 layer motherboard with 64K static RAM cache. The system includes a 100MB hard drive, 2 TEAC floppy drives, enough RAM for high speed compiling and multi-tasking, your choice of excellent keyboards, parallel and 2 serial ports, and VGA monitor.

$2495 $125 Month

PRINTERS FOR EVERY JOB

PANASONIC'S OUTSTANDING NEAR LETTER QUALITY PRINTER

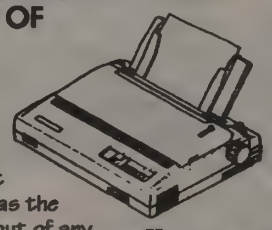
Here's a great buy on our most popular printer. Delivers excellent "near letter quality" print, and zooms along at 192 cps in the draft mode. Incudes automatic tractor feed with paper parking and self loading.

Panasonic Office Automation OA

Call for Best Price

2 Year Warranty!

HIGH SPEED 24 PIN STAR PRINTER DEFINES NEW STANDARD OF QUALITY

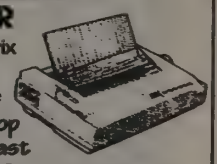


This terrific printer is not only quiet and easy to use, but it's very fast (250 cps) and has the best looking output of any printer in its class.

$279

star micronics

BROTHER'S TOP OF THE LINE, HI-SPEED NEAR LETTER QUALITY PRINTER



Our fastest dot matrix printer produces text and graphics that are good enough for desk top publishers. It's very fast (370 cps) easy to use, & perfect for high output users.

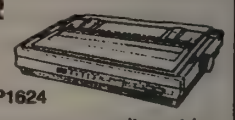
$299 $17/Month

brother

COLOR UPGRADE AVAILABLE $75

PANASONIC WIDE CARRIAGE 24-PIN PRINTER

LETTER QUALITY!



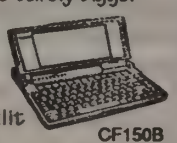
Here's a great buy on an outstanding wide carriage printer. It's easy to use, has excellent "letter quality" print, and an automatic self-loading tractor feed with paper parking. 2 Year Warranty!

Panasonic Office Automation OA

Call for Best Price

LAPTOP COMPUTERS

PANASONIC'S WONDERFUL NOTEBOOK COMPUTER

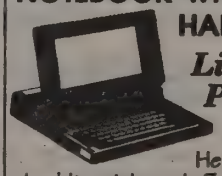


This tiny laptop is barely bigger than a notebook, but it's fast, fun, and has a new easy to read backlit screen. Includes 640k/RAM, AC adaptor and battery charger, and DOS.

Panasonic Office Automation OA

Call for Best Price

BONDWELL 286 NOTEBOOK WITH 40 MB HARD DRIVE

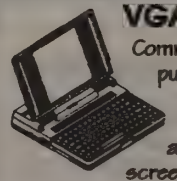


Light and Powerful

Here's a terrific buy! It weighs only 7 pounds, has a backlit screen, and 40 MB hard drive, and comes complete with an "extra' battery and external charger.

$1299 $65 Month

COMMAX NOTEBOOK 286 WITH HARD DRIVE & VGA SCREEN



Commax's tiny new computer comes complete with 20MB hard drive and a bright and sharp VGA screen. It's about the size of a small notebook, but has all the power of the most popular desktop computers. **$1699**

386-SX with 30 MB HARD DRIVE **$2499**

TANDON 386-SX *NOTEBOOK* LAPTOP COMPUTER

This highspeed Tandon 386-SX Laptop with 30 MB Harddrive and 2 MB RAM weighs less then 7 lbs. It has a VGA Screen, is expandable to 16 MB RAM and is available with a 60 MB Harddrive

In Stock NOW! **Call for Best Price!**

EXCELL 386-SX LAPTOP w/120 MB HARD DRIVE

Lightweight, comfortable, easy to use and carry

120 Mb Hard Drive Removable keyboard & VGA screen. Includes 2 serial ports, 1 parallel, and the latest version of DOS.

$2599 $135 Month

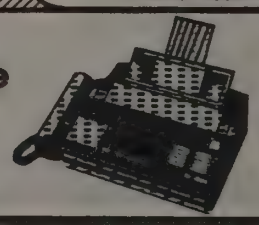
with 40 Mb Hard Drive **$2399**

MANAGER SPECIALS

Info Mouse	As Low As	$19
3 Year Warranty		
Game Software	As Low As	$29
Xenix Mouse with Windows		$99
Info Scanner		$99
MiniScribe Hard Drive 40MB		$159

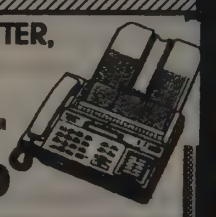
FAX MACHINES

PANASONIC FAX With Answering Machine Panasonic



$449 $22 Month

SHARP FAX WITH PAPER-CUTTER, AND 12 PAGE MEMORY



This unit is quick (13 sec), has a 12 page memory, papercutter, halftones, a phone/fax switch.

Works With Your Answering Machine

$769

GUARANTEED! Uncle Ralph's

4. One hour repair service
If you have a problem with one of our computers we can usually have it fixed within 1 hour. It's important to us that our customers remain satisfied.

5. 90-day interest-free financing
You can defer payment for 90 days and pay no interest at all! Or you can charge it to your Uncle Ralph's credit card account.. Sometimes we even take cash! Subject to lender approval.

6. Tech Support 7 days a week
Our Tech Dept. is open for you 7 days a week— til 8 pm Monday through Friday, and til 6 pm on weekends.

7. We'll keep you satisfied!
We've been putting smiles on faces for 9 years. We know what it takes to do a good job...and we do it everyday!

TDK DISKETTES

TDK 3.5" 720K	$7.99*
TDK 3.5" 1.44	$16.95*
TDK 5.25" 1.2MB	$9.95*

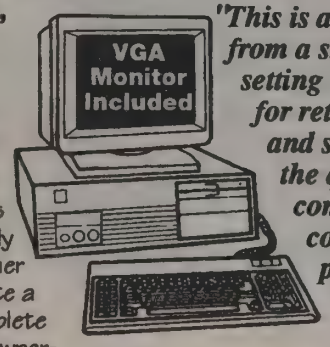
*Boxes of 10, Lifetime Guarantee

Head Cleaner.....	$5.95
Backup Tape Cleaner ..	$29.95

Call for On-Site Service & Consultation

UR/Omnitel 33 MHz 386

Static RAM Cache, 100MB Hard Drive, 4MB RAM, 2 Floppy Dirves, 1024x768 VGA Color Monitor & Tape Backup



"This is a fine machine from a store that is setting the standard for retail support and service ...Given the quality of the components, I consider the prices excellent."
Bernie Zilbergeld
Computer Currents

The OmniTel motherboard is making some big waves lately and we've packaged it with other excellent components to create a high performance system. Complete system includes hard drive, Viewperfect monitor, 512K VGA card, 2 floppy drives, 100 MB tape backup, parallel, game, 2 serial ports, your choice of excellent keyboards. & DOS.

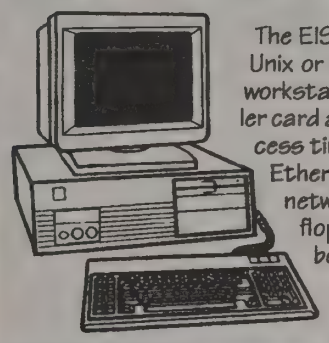
"Super Find"
S.F. Focus Magazine

Complete System Includes MS-DOS

$2999
$160 Month

UR/Mylex 486-33 EISA

THE FASTEST 486 COMPUTER ON THE MARKET



The EISA bus makes this CPU superior for use as a Unix or Novell file server, or as a high powered CAD workstation. With Mylex's (optional) caching controller card and an SCSI hard drive it can achieve disk access times of 0.2 MS. With Mylex's EISA (optional) Ethernet Card it can double the speed of most networks. Base System includes 4 MB RAM, 2 floppy drives, serial and parallel ports, and keyboard. Video and Hard Drive separate.

"If I wanted to replace my entire system for optimum all around performance, I would build it from Mylex EISA based boards"
Michael N. George
Personal Workstation

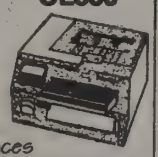
Double Your Network Speed!
$212 Month

$4,258

LASER PRINTERS and ACCESSORIES

OKIDATA LASER PRINTER

OKIDATA OL800



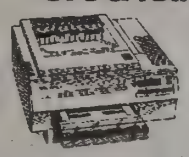
This entry level business page printer produces 8 ppm, 300 dpi publication quality output with crisp blacks.• 26 fonts/4 typefaces standard • HP II, IBM Pro & Diablo 630 compatible • Complete with 200-sheet paper trayand More!

Industry's Best Warranty
5 yrs on printhead,
1 yr parts/labor

$949
$47 Month

BROTHER'S TOP RATED LASER PRINTER

brother

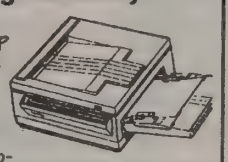


This terrific laser printer has collected Editor's Choice awards from virtually all major computer mags. It runs on the reliable Canon engine, has eight major emulations including HP Laserjet II and HPGL, includes 44 resident fonts, enough memory to do full page graphics straight out of the box, and a super sharp image.

$1199
$65/Month

SUPER-FAST EVEREX/ABATON POSTSCRIPT LASER PRINTER

No Manual Switching Necessary.



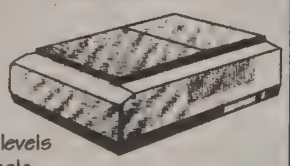
Automatically switches between Postscript and HP emulations, and automatically switches between parallel, serial and AppleTalk interfaces. With 2.5 Mb RAM, this new introduction from Everex may be the best Postscript buy to date. .

$1599
$85/Month

PC & Mac EVEREX

EVEREX/ABATON FLATBED SCANNER

EVEREX



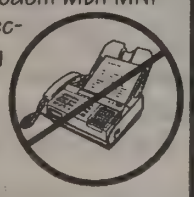
Here's a terrific flatbed scanner with the superb clarity of 256 levels of true gray-scale scanning. Handles up to 8-1/2" x 14" images! For PC, PS/2, Mac and NeXT systems.

$1199
$60 Month

MODEMS

OMNITEL INTERNAL FAX /MODEM

9600 Baud Fax and 2400 Baud Modem with MNP data compression and error correction. Complete sending and receiving capabilities. Other models also available.



✓ V.42
✓ G3 Compatibility
✓ Easy to Use Software

$249

MODEMS

Everex • Cardinal
OmniTel • Anchor

2400 Baud From $79.95

MOTHERBOARDS

MYLEX • OMNITEL • DEICO MOTHERBOARDS IN STOCK

286 16Mhz - Deico	$169
386SX - Mylex	$349
386 20MHz w/cache - Mylex	$599
386 25MHz w/cache - Mylex	$899
386 33MHz w/cache - OmniTel	$999
486-25 - OmniTel	$1899
486 33 MHz - Mylex	$2999

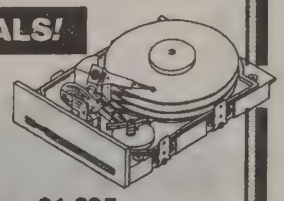
Build Your Own Computer
GREAT PRICES ON
☞*RAM chips* ☞*Power supplies, video cards*
☞*Everything you need to build it yourself!*

MONITORS & HARD DRIVES

QUALITY MONITORS!

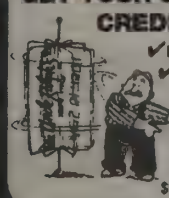
Packard Bell 12" mono	$79.95
Leading Technology 14" B/W	$129.95
Hiundai VGA	$299
View Perfect 1024 x 768	$399

HARD DRIVE SPECIALS!



Western digital 80 MB **$399**
Conner 100 MB **$429**
Maxtor 200 MB **$799**
Micropolis 150 MB ESDI **$799**
Micropolis 338 MB ESDI w/controller **$1,695**

GET YOUR UNCLE RALPH'S CREDIT CARD TODAY!



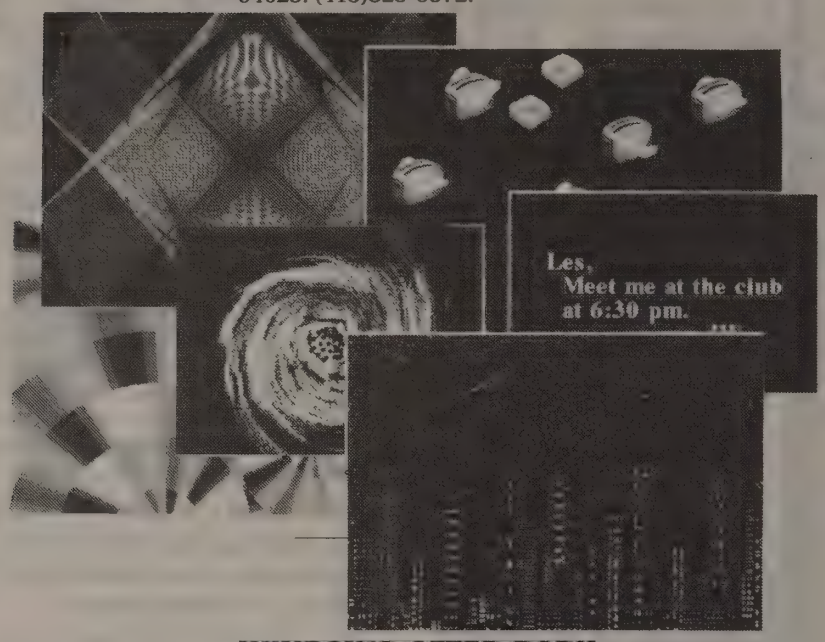
✓LOW MONTHLY PAYMENTS!
✓APPROVAL USUALLY WITHIN MINUTES!*
*SUBJECT TO LENDER APPROVAL. MONTHLY PAYMENTS SUBJECT TO INTEREST SURCHARGE. MINIMUM MONTHLY PAYMENT PER ACCOUNT IS $15.00. DOWN PAYMENT MAY BE REQUIRED.

2569 Telegraph Ave. Berkeley
5 blocks south of U.C.
841-5280
FAX NUMBER: 841-4743
open 7 days: M-F 10-8, Sat & Sun 11-6
Items limited to stock on-hand, & subject to prior sale. Ad expires 4-23-91. ©U.R., 1991

FREE PARKING!

Uncle Ralph's
9 Years of Best Prices!

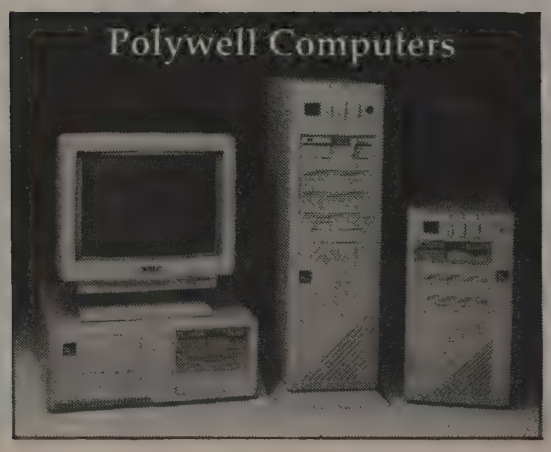
your data is safe. It also can save you time, filling a 360K disk in less than forty seconds. ($19.95 including free technical support and lifetime warranty) MySoftware Co., 1259 El Camino Real, Suite 167, Menlo Park, CA 94025. (415)325-9372.



WINDOWS AFTER DARK

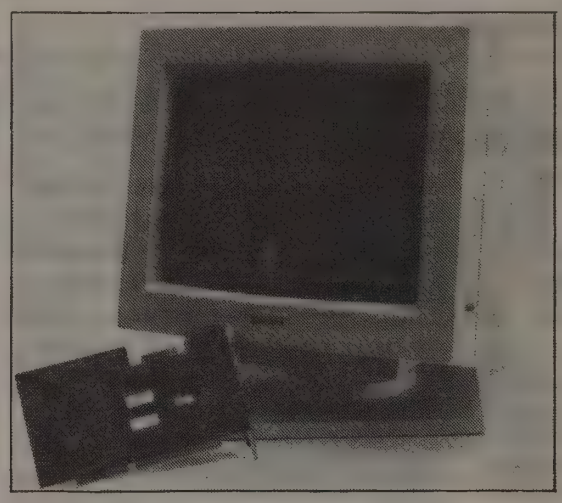
Berkeley Systems has released the Windows version of its top-selling screen saver, After Dark. Now Windows 3.0 users can enjoy the same entertaining, modular screen saving creativity that Berkeley Systems brought to the Macintosh in 1989. When machines are left on but unattended, images can be burned-in to the screen, causing permanent damage. After Dark prevents burn-in by automatically displaying screen art. The program contains more that thirty-five different color displays, including Flying Toasters, tropical fish, and a night skyline complete with meteors and lightning. With After Dark's WindowShutter, the users can prevent others from awakening the screen. After Dark Windows will also blank the screen even when Windows is not running or is not installed on the computer. ($49.95) Berkeley Systems, Inc., 1700 Shattuck Ave., Berkeley, CA 94709. (415)540-5535.

PC HARDWARE



POLYWELL ENHANCED PRODUCTS

Polywell has enhanced its product line of personal computers for 1991. The Poly 486-25/33SL is a full tower available in 25MHz or 33MHz versions that include an ISA 486-based system, 4MB RAM, a Maxtor 200MB hard disk, built-in 487 math coprocessor, twelve expansion slots, and a 14" multisync color monitor. The Poly 386-33EM is a 33MHz EISA bus mini-tower with 4MB RAM, an HP 340MB hard disk and a 14" monochrome monitor. The Poly 386SX-20PB is a 20MHz ISA bus with 1MB RAM expandable to 16MB, a Quantum 40MB hard disk, and a 14" color VGA monitor. (Poly 386SX, $1,770; Poly 386, $4,900; Poly 486 25MHz, $4,950, 33MHz, $5,950) Polywell Computers, Inc., 61-C Airport Blvd., S. San Francisco, CA 94080. (415)583-7222.



JDR SUPER HIGH RESOLUTION PACKAGE

JDR Microdevices introduced a new bundle containing all the hardware and software needed to improve the graphic resolution of most systems.

PRODUCT UPDATES

➤**Above Software** has announced **Above DISC+ v4.0,** its memory management tool for 386-, 286-, and 088-based systems. Above Software, Inc., 2698 White Rd., Suite 200, Irvine, CA 92714. (714)851-2283.

➤**Alisa Systems** released **AlisaMail v2.0**, its VAX-based email system that integrates Microsoft Mail and VMS mail systems. The new version also runs on top of AppleTalk for VMS v3.0. Alisa Systems, Inc., 221 E. Walnut St., Suite 175, Pasadena, CA 91101. (818)792-9474.

➤**Aperture Technologies** released **Aperture Visual Information Manager 1.6**, an update of its precision drawing, integrated database software. The update is free to registered users. Aperture Technologies, Inc., 84 W. Park Place, Stamford, CT 06901. (203)975-7587.

➤**DigaSoft** introduced **QAPlus 4.52**, the latest release of its diagnostic software with enhanced testing capabilities. DigaSoft, Inc., 5615 Scotts Valley Dr., #140, Scotts Valley, CA 95066. (408)438-8247.

➤**Dynamic Graphics** announced a unique free software upgrade program for ***image*QUEST**, the new visual and verbal indexing system for Designer's Club monthly clip art service for Macintosh and IBM PC and compatibles users. Dynamic Graphics Inc., 6000 N. Forest Park Dr., PO Box 1901, Peoria, IL 61656-1901. 1-800-255-8800.

➤**Focus Information Systems** announced the availability of a 32K Color upgrade to the **2-the Max VGA 4000** video graphics card. Focus Information Systems, Inc., 42840 Christy St., Fremont, CA 94538. (415)657-2845.

➤**Key Tronic** is introducing a new **Limited Lifetime Warranty** on all its keyboards. Key Tronic, Inc., PO Box 14687, Spokane, WA 99214. (509)928-8000.

➤**Toshiba** announced a **$300 rebate** offer for end users purchasing the **T1200XE**, 20MB hard disk version, between January 21 and June 30, 1991. Users will be eligible to receive a $300 rebate coupon at point of purchase to upgrade to a 40MB hard disk. Rebate coupons may be redeemed beginning April 21, 1991 through March 31, 1992. Toshiba America Information Systems, Inc., 9740 Irvine Blvd., Irvine, CA 92718.

➤**Ventura Software** announced **Ventura Publisher, Macintosh Edition v3.0.1.** The update includes new features, a WordBridge bundle and international dictionary support. All registered users will automatically receive the 3.0.1 update free. Ventura Software, Inc., 1-800-822-8221.

Continued

MADE IN USA

TEMPO

EVEREX

TEMPO 386SX w/1MB 20MB HD NOTEBOOK $2250

TEMPO 286-12MHz/1MB	790
TEMPO 286-16MHz/1MB	830
TEMPO 386SX-16MHz/1MB	940
TEMPO 386-20MHz/1MB	1275
TEMPO 386-25MHZ/1MB	1400

AGI 3000D 386-20MHz/OWS/1MB/80MB HD	$1890
AGI 3000L 386-25MHz/OWS/2MB/64K Cache/158MB HD	3290
AGI 3000K 386-33MHz/OWS/4MB/64K Cache/158MB HD	3790
AGI 4000A 486-23MHz/OWS/4MB/64K Cache/158MB HD	5850
AGI 1700A 286-10MHz/1WS/512K/40MB HD	885
AGI 1700C 286-12MHz/OWS/1MB/40MB HD	945
AGI 1800A 286-10MHz/1WS/512K/40MB HD	925
AGI 1800C 286-12MHz/OWS/1MB/40MB HD	990
AGI 3000G 386SX-16MHz/OWS/1MB/80MB HD	1555

286-12/20MB Hard Drive

- 80286-12MHz Motherboard
- 1MB Ram Installed Expandable to 8MB
- Seagate 20MB Hard Drive
- Hard and Floppy Drive Controller
- AT I/O 2S, 1P, 1G Port
- 1.2 or 1.44MB Floppy Drive
- Top Quality AT Case
- 200 Watt Power Supply
- 101 Enhanced Keyboard
- Clock, Calendar w/Battery Backup
- 5-16, 3-8 Bit Expandable Slots

$559

HYPER POWER

386 System/80MB Hard Drive

- 386 0-Wait State Motherboard
- 1MB Ram Installed Expandable to 16MB
- IDE Drive Host Adapter/2S1P1G
- 80MB Hard Drive (19ms)
- 1.2 or 1.44MB Floppy Drive
- Top Quality AT Case
- 200 Watt Power Supply
- 101 Enhanced Keyboard
- Real Time Clock/CMOS Memory
- 80387 Math Co-processor Socket
- 1-32, 6-16, 1-8 Bit Expandable Slots

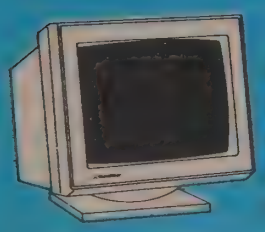
25MHz $1235
33MHz w/64K Cache 1560
Full Size Tower Option .... Add 100

386 Power With 286 Price

386SX/40MB Hard Drive

- 386SX-16MHz Motherboard
- 1MB Ram Installed Expandable to 8MB
- IDE Drive Host Adapter/2S1P
- 40MB Hard Drive (28MS)
- 1.2 or 1.44MB Floppy Drive
- Top Quality AT Case
- 200 Watt Power Supply
- 101 Enahanced Keyboard
- Real Time Clock/CMOS Memory
- 80387SX Math Co-Processor Socket
- 6-16, 2-8 Bit Expandable Slots

16MHz $875
20MHz 990



VIDEO SUPER VALUE

Mono Monitor w/MGP Card	$90
GoldStar 640 x 480 w/.51mm Dot Monitor w/16 Bit VGA Card	295
GoldStar 640 x 480 w/.39mm Dot Monitor w/16 Bit VGA Card	339
GoldStar 640 x 480 w/.31mm Dot Monitor w/16 Bit VGA Card	389
Relisys1024 x 768 w/.28mm Dot Monitor w/16-Bit 512K VGA Card	415

IDE HARD DISK BUNDLES

Western Digital 40MB (25ms)	$230
Seagate ST 157A 40MB (25ms)	240
Seagate ST 1102 A 89MB	395
Toshiba 100MB (23 ms)	445
Rodime 100MB (23 ms)	475
Conner 104MB (25 ms)	475
Conner 200MB (15 ms)	830
Maxtor 80MB (17ms)	385
Maxtor 213MB (19ms)	830

*Bundles Drives Include Drive Controller, Cable

PRINTERS

Epson LQ1050	$715
Panasonic KX1180	165
Panasonic KX1191	235
Panasonic KX1124	295
Panasonic KX-1524	365
Panasonic KX-1624	365
Panasonic LASER PARTNER KX-P4420	925
Panasonic LASER PARTNER KX-P4450	1335
HP DeskJet 500	489
HP LaserJet IIP	845
HP Laser Series III	1550

FLOPPY DISK DRIVES

Teac 360K	$62
Teac 1.2MB	75
Teac 720K	68
Teac 1.44MB	75

MISCELLANEOUS

Mono Graphic Card w/pp	$20
Everex EGA Card w/o pp	$60
Everex EGA Card w/pp	65
Oak Chip Set 16Bit VGA Card	65
Paradise Chip Set 16 Bit VGA Card	85
Everex VGA Card	145
AT I/O 2S1P1G	27
Everex I/O S,P, Port	40
Everex I/O S,P,G, Port	45
IDE Drive Host Adapter	35
IDE Drive Host Adapter/2S1P1G	55
Everex Ram 3000 Memory Board	79
Everex Ram 8000 Memory Board	175
Everex Ram 10,000 Memory Board	130
Keytronics 101 Key Keyboard	44
NTC 101 Keyboard	37
Chicony 101 Keyboard	35
XT Multi I/O	45
Universal Floppy Controller	40

MODEMS

Zoltrix 2400 (Int)	$60
Everex 2400B (Int)	105
Everex 2400B/MNP (Int)	$139
Everex 2400B (Ext)	159
Everex 2400B/MNP (Ext)	189
Everex FAX 9600/ 2400B (Int) MNP	249
Everex FAX 9600/ 2400B (Ext) MNP	305
Everex Carrier Portable/Data Modem	215
Everex Carrier Portable/Fax Modem	295

MONITORS

Supertron 14" Amber Flat Screen	$99
Supertron 14" Paper White Flat Screen	99
Hyundai 12" Amber	75
GoldStar Mono Amber 12"	75
GoldStar 14" RGB	199
GoldStar 14" EGA	285
GoldStar 14" VGA 640 x 480 w/.51 Dot	230
GoldStar 14" VGA 640 x 480 w/.39 Dot	295
GoldStar 14" VGA 640 x 480 w/.31 Dot	330
GoldStar 14" VGA 800 x 600 w/.31 Dot	350
GoldStar 14" VGA 1024 x 768 w/.28 Dot	$350
NEC 2A	485
NEC 3D	625
NEC 4D	985
Nanao 8060S	565
Nanao 9070S	945
Eversion EGA	345
Eversion VGA	360
Relisys EGA	330
Relisys 9503 Gray Scale VGA	135
Relisys 9513 640x480 w/.31 Dot	315
Relisys 9515 1024x768 w/.28 Dot	325
Relisys 5155 Multisync	435
Relisys 1520 1024x768 w/.31 Dot (non-interlaced)	560

HARD DISKS

Seagate ST225 20MB	$160
Seagate ST251-1 40MB	235
Seagate ST4096 80MB	515
Seagate ST110A 89MB	375
Maxtor LX 213MB	825

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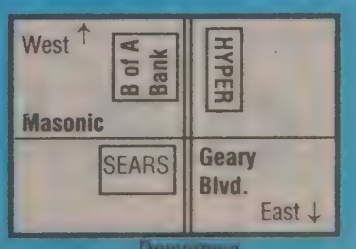

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32,000 Color Lifelike Video Controller Video Standard for the 90's

KRIS 4000 SUPREME VGA DISPLAY CONTROLLER

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- Upgradeable to 1MB for 256 colors in 1024x768
- 32000 color option — upgrade to lifelike video!
- 18 month warranty — Unmatched in the Industry!

Mfr Direct: $129

KRIS 14VC

- 14" color, 1024x768 0.28mm dot pitch
- Non-interlaced & interlaced support
- Tilt & Swivel base
- Ergonomic non-glare dark tinted screen
- Vertical Scan: Auto-sync 50-90Hz
- Horizontal Scan: 30-36.5KHz range
- 45MHz Bandwidth

Mfr Direct: $335
Multi-Sync Model: $399
ASK FOR NON-INTERLACED

KRIS 20VC

- 20" color, 1024x768
- Ergonomic non-glare dark tinted screen
- Tilt & Swivel base
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- Horizontal Scan: 30-36.5KHz range
- 45MHz Bandwidth
- 0.31mm dot pitch
- Non-interlaced & interlaced support

Mfr Direct: $1,575

KRIS 15MV

- 15" paper white mono
- Portrait controller incl.
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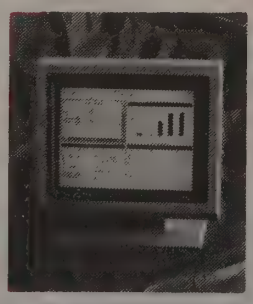
- Tilt & Swivel base
- Vertical Scan: Auto-sync 45-90Hz
- Horizontal Scan: 15-70KHz range
- 65MHz Bandwidth

Mfr Direct: $725

KRIS 14MA

- 14" monochrome VGA
- 640x480 resolution
- Paper white, gray scale
- Unique & Advanced: flat screen design
- Ergonomic non-glare tinted screen
- Designer-inspired contrasting bezel
- Tilt & Swivel base



Mfr Direct: $115

For monitors or **1024x768 VGA cards,** call the KRIS experts for prompt service. KRIS monitors carry a 1-year Warranty & 45 day $-Back Guarantee.

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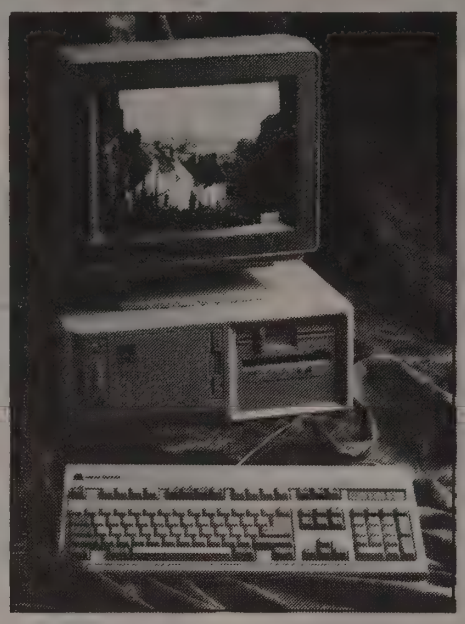
PRODUCT SPOTLIGHT

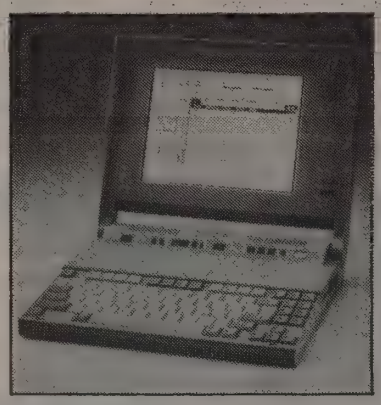


Targeted at 8088, 286, 386, and 486 PC compatibles, this bundle includes the Relysis 9514 1024 x 768 VGA Monitor, a Modular Circuit Technology VGA Card with 512K installed, and software drivers for Windows 3.0 and other popular software programs. ($599) JDR Microdevices, Inc., 2233 Branham Lane, San Jose, CA 95124. 1-800-538-5000.

MICRO EXPRESS CD-ROM PC

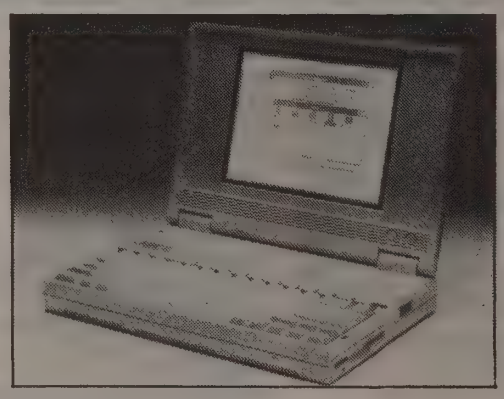
Micro Express has introduced a 386SX PC that features a built-in CD-ROM drive. Dubbed the ME 386-SX/20/Caching/CD-ROM, this computer easily allows access to huge databases, stored on CD-ROMs, while offering the superior performance of a 20MHz, 386SX personal computer. It also includes 2MB RAM, 16K RAM cache, 80MB hard disk drive, 5.25" 1.2MB floppy disk drive, extended VGA color video card, 1024 x 768 resolution color monitor, CD-ROM drive, and a choice of keyboards. ($2,848) Micro Express, Inc., 1801 Carbegue Ave., Santa Ana, CA 92705. (714)852-1400.

LAPTOPS



IBM PS/2 LAPTOP

The IBM Personal System/2 L40 SX is a lightweight (7.7 lbs.), durable, battery-operated 20MHz 386SX computer that gives users desktop computing power on the road or in the air. It features a full-size keyboard identical to that found on other IBM PS/2 PCs, 2MB RAM upgradable to 18MB, 60MB hard disk drive, a 10" VGA display, and a monitoring system that displays the status of vital internal functions, such as remaining battery life. The PS/2 Laptop is based on an AT-bus architecture and can handle DOS, Windows, and OS/2. It also features a suspend/resume function that allows users to close the unit without needing to save a current application or information. ($5995) IBM Corp., 1133 Westchester Ave., White Plains, NY 10604.



NBCC 386SX NOTEBOOK

NBCC (National Business Computers & Communications) has introduced its NBCC 386SX/16MHz Notebook PC. The company has already sold several thousand OEM units, and has decided to make them available through distributors and VARs. The NBCC 386SX Notebook features a 23ms 20MB hard disk drive, 1MB RAM expandable to 5MB, a 3.5" 1.44MB floppy disk drive, and a LCD 640 x 480 White VGA 8.5" display. Device driver software for all major operating systems and popular business programs are supplied at no extra charge. The NBCC 386SX Notebook comes bundled with DR-DOS 5.0. ($2995) NBCC USA Corp., 19800 Mac Arthur Blvd., Suite 1450, Irvine, CA 92715. (714)724-4584.

LIBREX NEW NOTEBOOKS

Librex Computer Systems has announced the initial shipment of its 286 and 386SX notebook computers. Both products weigh 6 lbs. and feature a 1.44MB floppy drive, a 10" monochrome VGA display, and additional ports and slots for peripherals. Also included are a carrying case and MS-DOS 4.01. Optional features include fax/modem capabilities, extended memory and data storage capacity, and a socket for a math coprocessor. Power management features include suspend/resume and

Continued on page 122

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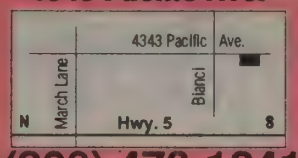

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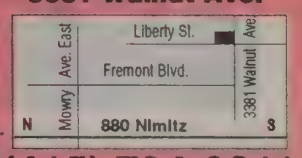

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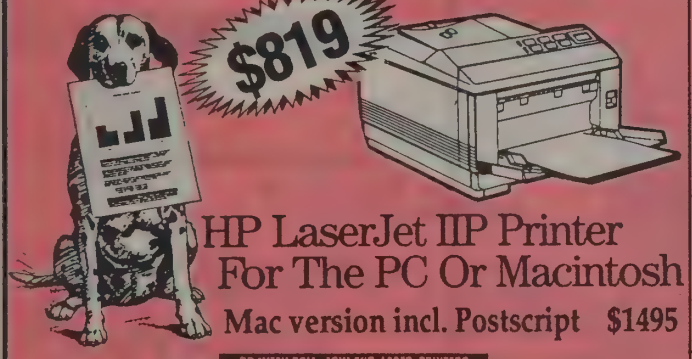

HP LaserJet IIP Printer For The PC Or Macintosh

Mac version incl. Postscript $1495

PC WEEK POLL: LOW-END LASER PRINTERS

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HP LaserJet IIP (Hewlett-Packard Co.)	84	12.0/3.0	88	90	92	88	86	84	82	81	80	78	72
IBM LaserPrinter E (IBM)	78	6.8/2.0	80	81	87	84	78	77	78	72	72	71	71

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Mac interface Available.

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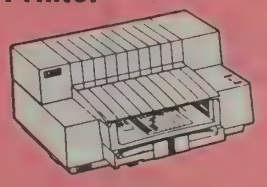
HP DeskWriter Printer



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- Wide variety of built-in fonts
- 3-year warranty
- Quiet, desktop operation

Only $459

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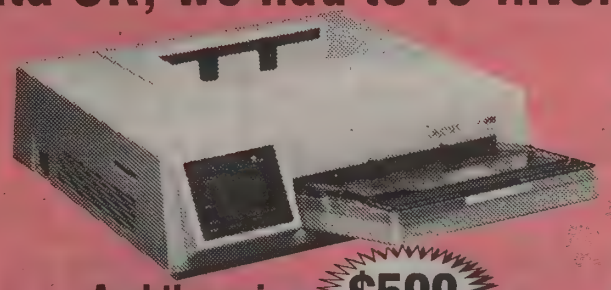
To earn the Okidata OK, we had to re-invent the laser printer

At $599, the Okidata OL400 is the lowest-priced page printer on the market today. What's more, that price includes features you won't find on any LaserJet.

The 4 ppm OL400 emulates HP® Series II for compatibility with most popular software, and comes complete with more standard type faces and more resident fonts, plus a high-capacity paper tray that's optional on the HP-all in a slim, lower-profile design that's less bulky on a desktop.

The Laserless Printhead: Warranteed For 5 Years.

The OL400 also comes with the longest warranty in the industry: 5 years on the printhead, plus 1 year parts and labor on the entire printer. To deliver a warranty that strong, our engineers had to re-invent the laser printer.



And the price: $599

To replace the conventional page-printer technology of laser beams, lenses and rotating mirrors, they designed a proprietary, solid-state LED printhead with no moving parts.

Its All In Our Head.

Besides being inherently reliable, the simpler design of the Okidata printhead also means a straight-line paper path that's less likely to jam—even when feeding envelopes, heavy stock, or labels. And, since we build it ourselves, the cost stays low.

The Okidata OK-A Badge Of Honor

The performance and features of the OL400 were good enough to earn it a PC Magazine Editors' Choice Award. But it also had to earn something else-the Okidata OK.

What's the Okidata OK? Simply our promise that every printer we make will deliver not merely acceptable performance, but outstanding performance - not just good value, but exceptional value.

OKi OK!

OKIDATA OK!

We don't design it to work. We design it to work wonders.

RADIUS MONITORS

Radius Two Page Monitor (interface included)	$1269
Radius Pivot Display Monitor (interface included)	1075

EPSON

Epson LX-810	179
Epson LQ-510	279
Epson LQ-850	449
Epson LQ-860	564
Epson LQ-1010	394
Epson LQ-1050	634
Epson FX-850	309
Epson FX-1050	419
Epson EPL-7000 Laserprinter	799

OKIDATA

Okidata ML 320	299
Okidata ML 321	429
Okidata ML 380	280
Okidata ML 390 Plus	434
Okidata ML 391 Plus	589
OkiLaser 400	599
OkiLaser 800 (8ppm)	869

TOSHIBA

Toshiba T1000SE	$899
Toshiba 1000XE	1195
Toshiba T3100SX 40 MB HD	3495
Toshiba T3100SX 80 MB HD	CALL
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HP IIP/III memory board 0MB	49
HP IID envelope feeder	199
Epson tractor feed/CSF	40% OFF
Mouse pad	3
Epson LQ multifont	29
Epson 386-20 MHz 2 MB	995
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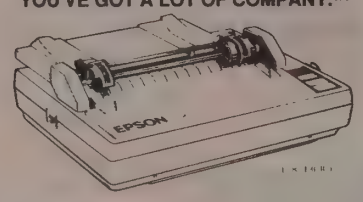

LX-800

• 180cps, 30cps NLQ • 80 column printer
• SelecType front control panel
• EPSON's 1 year limited warranty

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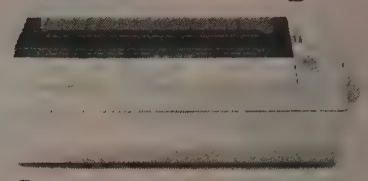

LQ-510

• 180cps, 60cps LQ • 24-pin printer
• Built-in Roman and SansSerif fonts
• 360x360 dpi resolution

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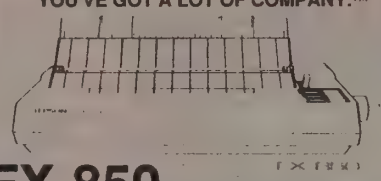

FX-850

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• 240x216 dpi resolution • 9-pin printer
• 1 year warranty

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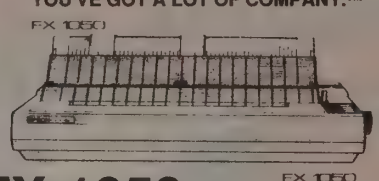

FX-1050

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• Sheet Load • 9-pin printer
• 1 year warranty

$399

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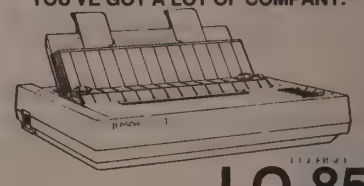

LQ-850

• 264characters per second
• Built-in push tractor feed • 24-pin printer
• 1 year warranty

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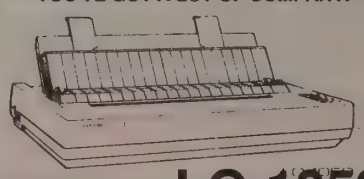

LQ-1050

• 360x360 dpi resolution • 6K Buffer
• 6 resident fonts
• EPSON's 1 year warranty

$599

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EPL-6000

• 300x300 dpi resolution • 6 PPM
• 6 resident fonts • Expandable to 4.5MB
• EPSON's 1 year warranty

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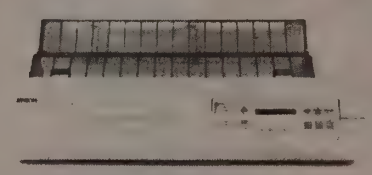

LQ-2550

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• 360x360 dpi resolution • 24-pin printer
• 7 resident fonts • 1 year warranty

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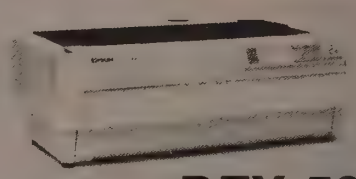

DFX-5000

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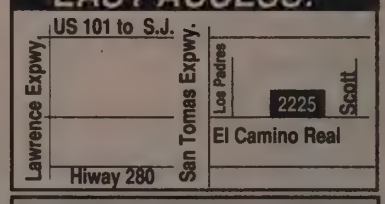

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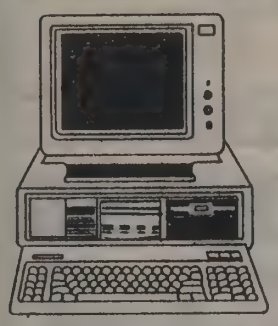

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• 80486 processor, 33MHz • 1MB RAM expandable to 16MB
• 128K Cache • 5.25", 1.2MB FDD • IDE-Hard/Floppy controller
• 101 enhanced keyboard • Serial/Parallel ports
• AWARD BIOS • INTEL chip sets • 1-year warranty

ACCESS
486-25MHz
128K Cache & 1MB RAM

SUPER FAST!

Super LOW Price!

SI: 29.0
LandMark: 100+

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• 80486 processor, 25MHz • 1MB RAM expandable to 16MB
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FULLY LOADED SUPER VGA SYSTEM!

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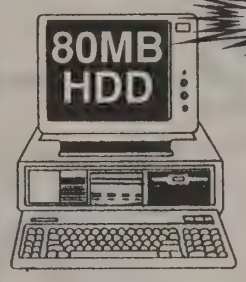

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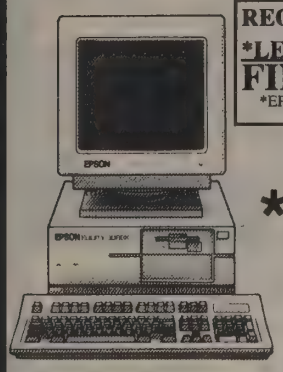

*$699

• 80386SX-16MHz • 1MB RAM exp to 14MB
• 1.44MB 3.5" FDD •MS-DOS 4.01
• Serial, parallel & mouse ports
• 5 expansion slots • EPSON's 1 year warranty

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FULLY LOADED
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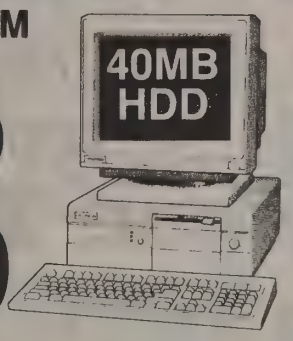

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• 80386SX-16MHz • "0" wait state • 1MB RAM exp to 8MB • 5.25", 1.2MB FDD • MS-DOS 4.01• Serial & parallel ports • 6 expansion slots • 101 key keyboard • Maxtor 8051A 40MB HDD • Qume 830 Monitor & Epson VGA Card • 18-month warranty

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FULLY LOADED VGA SYSTEM

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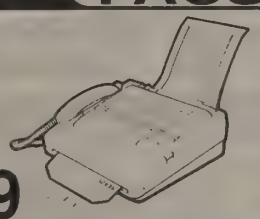

• 10 sheet automatic feeder
• 164' paper capacity
• 256K memory
• 16 grey scale
• Built-in telephone

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PriorityFax™ 3000

• Auto 5 page feeder • Auto paper cutter
• 30 page memory receive/send
• 1 year limited warranty

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SHARP
FO-216

• Auto cutter
• Auto fax/phone switch
• Answering machine hook-up

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SHARP FO-120 .....$449
SHARP F0-240 .....$699
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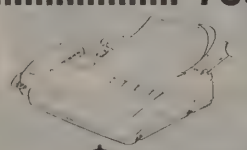
MURATA
M1100



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•Automatic multi-page feeder
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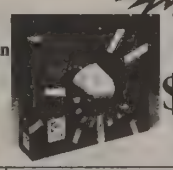

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ERGONOMIC MOUSE

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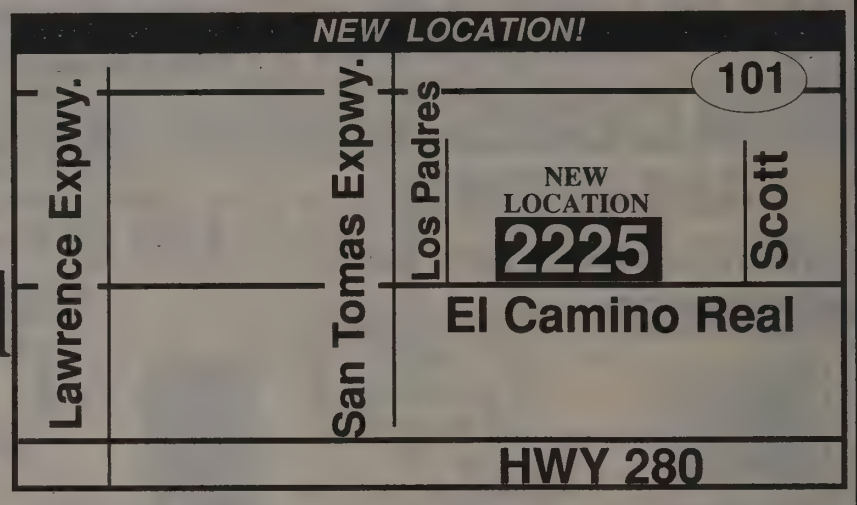

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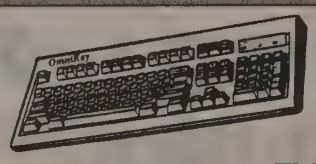

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Ultra		109

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- VGA, Super VGA, & 8514/A compatibility

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ML320	300cps, 63cps NLQ	349
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ML393C	COLOR, 140cps, LQ	1150
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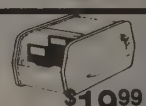

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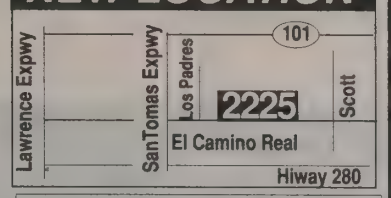

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PostScript Laser

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- 2MB RAM exp to 4MB
- 500 sheet paper capacity
- 26 internal fonts • 11PPM

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Laser Printer

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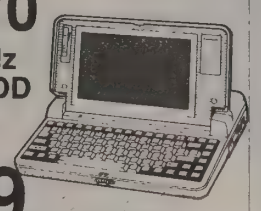
- 512K RAM exp to 4.5MB
- 250 sheet paper capacity
- 300 dpi resolution • 8 PPM

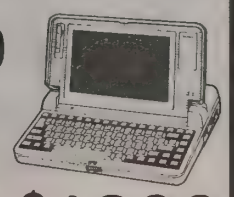
CF-270
286-16MHz w/20MB HDD



$1999

- 1M exp to 5MB • Backlit supertwist LCD
- 1.44MB, 3.5" FDD • MS-DOS 4.01
- Rechargeable batter pack
- Weights 7lbs w/battery

CF-170
V20-10MHz w/20MB HDD



- 88compatible
- 640K exp to 1.6MB
- 1.44MB, 3.5" FDD
- Backlit supertwist LCD

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CF-150B $599

FREE KX-P1180 W/CF170 PURCHASE

KX-P1123

- 192cps, 63cps LQ
- 5 built-in LQ fonts
- 2 year warranty

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KX-P1180

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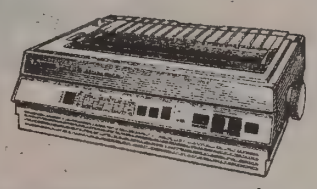
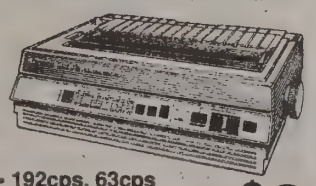


- 192cps, 38cps NLQ
- 240x216 dpi resolution
- 80 column printer

$149

KX-P1124

PC MAGAZINE EDITORS' CHOICE

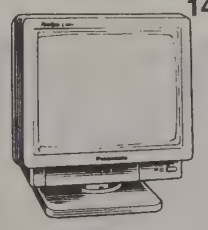


- 192cps, 63cps
- 5 built-in LQ fonts
- 2 year warranty

$249

KX-P1524 .....$359

C1391



14" Multi-Frequency Color Monitor w/STB
1MB VGA card
256 Colors at 1024

- .31mm dot pitch
- 1024x768 resolution

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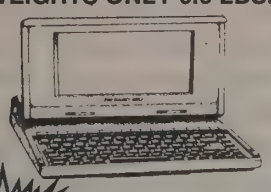
NOTEBOOK-SIZE WEIGHTS ONLY 6.6 LBS.!



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- 1MB RAM exp to 8MB • Standard 79/80 keys w/12 function keys20MB HDD & 3.5"1.44 FDD
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286-10MHz w/ 40MB HDD
Notebook Size Laptop

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Backlit LCD $1399

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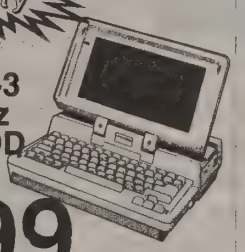
- Rechargeable & Removable battery pack

HYUNDAI

18-month warranty

SUPER LT-3 286-10MHz w/20MB HDD



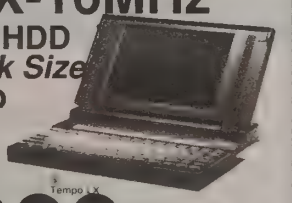
$1099

- 1MB exp to 2MB • 3.5", 1.44MB FDD
- Supertwist backlit LCD screen
- Serial/parallel ports • MS-DOS 3.3

Super LT-5 386SX Version $2499

TEMPO LX

386SX-16MHz w/ 20MB HDD
Notebook Size Laptop



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EVEREX

- Backlit VGA display • 1MB RAM exp to 5MB • 21MB HDD & 3.5" FDD • MS-DOS 4.01 • Full-travel keyboard w/12 F keys
- Parallel & serial ports
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ACCESS made computing affordable!

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RX7100 Laser Printer

FINALLY, A LASER PRINTER UNDER $600!

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- 640K RAM • 5 pages per minute
- Single paper bin
- HP emulation • 1 year warranty

RX7100PS PostScript Laser Printer.....$1399

Canon

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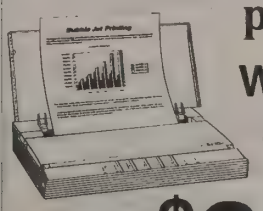


Weights *5* lbs.

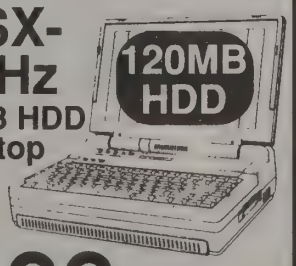
$329

- 83 characters per second
- 360x360 dpi resolution
- Optional rechargeable battery
- IBM Proprinter & BJ-130e emulation

EXCELL

386SX-16MHz w/ 120MB HDD Laptop

120MB HDD



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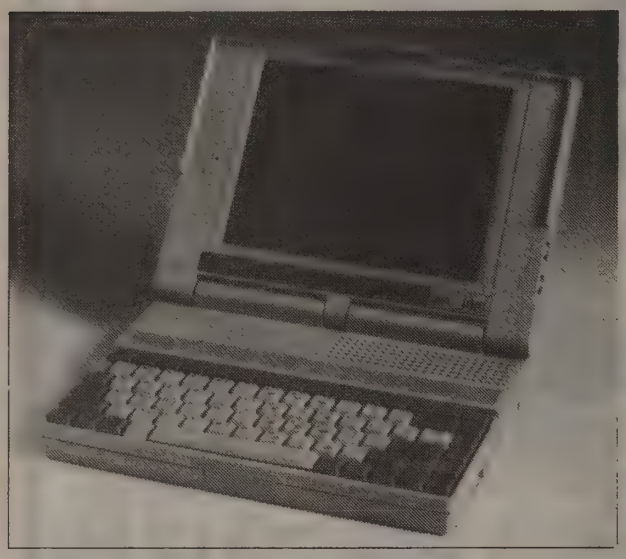
- INTEL 80386SX-16MHz • Conner HDD
- 1.44MB, 3.5" FDD • 1MB exp to 4MB
- LCD w/ backlit screen

40MB HDD Version $1999

PRODUCT SPOTLIGHT

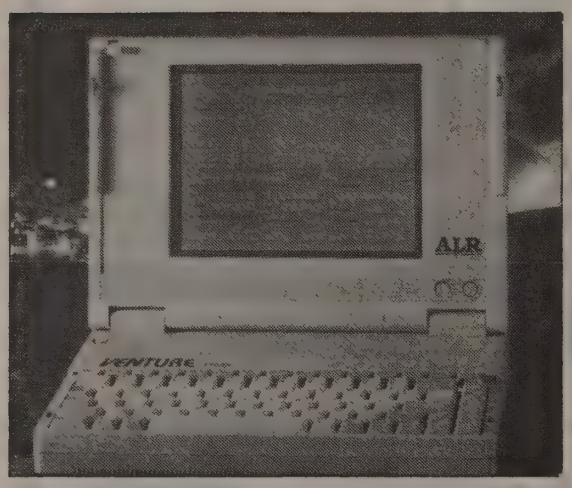
Continued from page 116



automatic sleep modes to extend battery life up to three hours. All Librex products are backed by a comprehensive customer support program that includes a 12-month warranty and product replacement within 24 hours for the first one hundred days. (Librex 286, $3,150; Librex 386SX, $4,895) Librex Computer Systems, Inc., 1731 Technology Dr., Suite 700, San Jose, CA 95110. (408)453-5220.

FORA NBS 386S NOTEBOOK

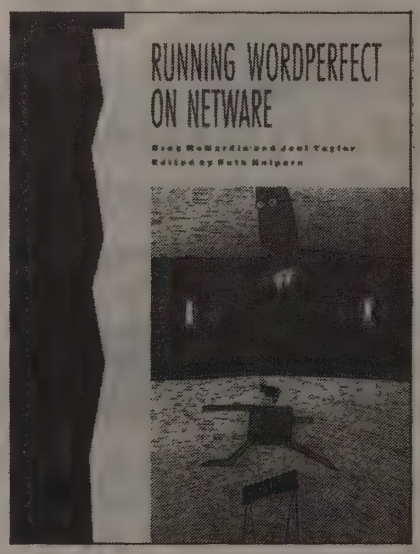
The NBS 386S, a 16MHz, 386SX notebook computer, includes file transfer software that features a unique anti-virus detection and protection system, SafeLink. This software utilizes a virus scan and identifies any virus contamination of the files to be transferred. If a virus is detected, SafeLink will alert users so they can determine how to proceed. In addition to this anti-viral capability, SafeLink is one of the fastest file-transfer utilities available, with transfer rates exceeding 500,000 bds. The NBS 386S comes with 1MB RAM expandable to 5MB, 64K ROM, a 3.5" 1.44MB floppy disk drive, and a choice of 2.5" 20MB ($2,995) or 40MB ($3,495) disk drive. Fora, Inc., 3081 N. First St., San Jose, CA 95134. (408)944-0393.



ALR ENTERS NOTEBOOK MARKET

The ALR Venture 16 notebook weighing 7 lbs. features a 16MHz 386SX coprocessor, and 8.5" LCD backlit display supporting VGA, and an 82-key keyboard with 101/102-key functionality and inverted-T cursor pad. The Venture 16 comes standard with 1MB RAM expandable to 5MB. Drive options include a 1.44MB floppy disk drive and the choice of 20MB or 40MB hard disk drive. ($2,795 with 20MB drive, $3,295 with 40MB drive) Advanced Logic Research, Inc., 9401 Jeronimo, Irvine, CA 92718. (714)581-6770.

BOOKS

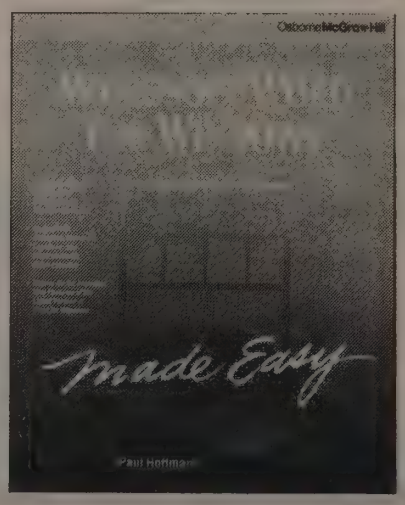


RUNNING WORDPERFECT ON NETWARE

Using WordPerfect on a network is different from using it on a stand-alone PC. *Running WordPerfect on NetWare* is written for users who want to understand how a network operates, as well as how WordPerfect runs on Novell NetWare. For users new to networks, this book provides a basic overview of a network, defining key components and describing how they work together to enable users to share data, resources, and programs. It also contains a review of WordPerfect features and commands. Network supervisors will benefit from the advanced information on installing and troubleshooting WordPerfect on NetWare. ($29.95) *Running WordPerfect on NetWare,* Greg McMurdie, M&T Publishing, Inc., 501 Galvenston Dr., Redwood City, CA 94063-4728. (415)366-3600.

OGIVAR INTERNOTE 286 NOTEBOOK

The Internote 286 is a 12.5MHz notebook computer featuring a VGA-compatible LCD display, a full-size embedded keyboard, 1MB RAM expandable to 5MB, and a 20MB hard disk drive. The high-density supertwist 10" LCD screen is easily read in any light and provides a high-quality display for long term viewing. With a footprint less than one square foot, the Internote 286 measures 12.3" x 10" x 2", easily fitting into a standard briefcase. ($2,999) Ogivar Technologies, Inc., 7200 Route Trans Canada Highway, Ville Saint-Laurent, Quebec, Canada H4T 1A3. (514)737-3340.

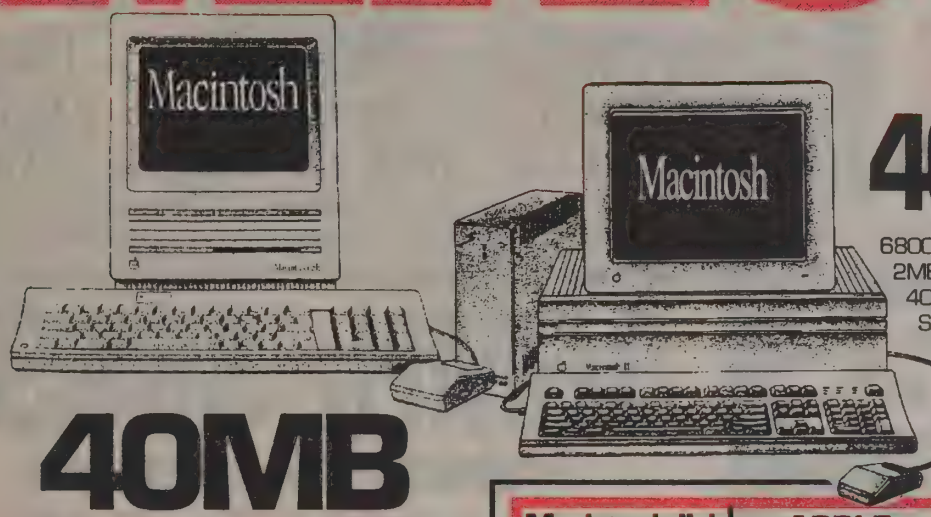


MICROSOFT WORD FOR WINDOWS MADE EASY

This book is designed to help you master Microsoft Word for Windows. It supplements Word for Windows' documentation by showing you, in step-by-step fashion, how to use Word for Windows. Each chapter is divided into lessons, with illustrated pictures of the computer screen so you will know what to expect as you use the program. Examples throughout the book demonstrate the numerous

Continued on page 137

MAC @ Fry's ELECTRONICS



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Serial/SCSI Ports
Mouse • Keyboard
#1536221

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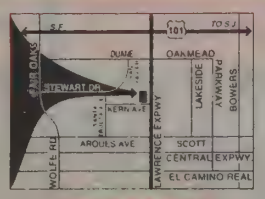

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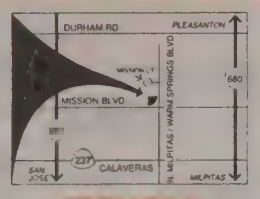

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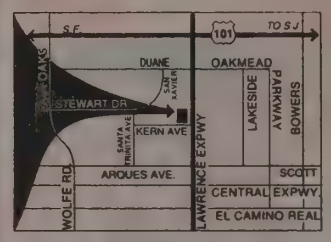

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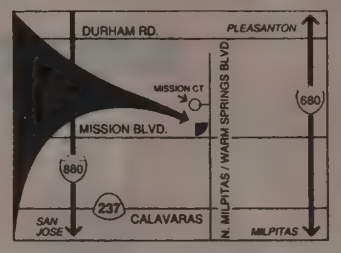

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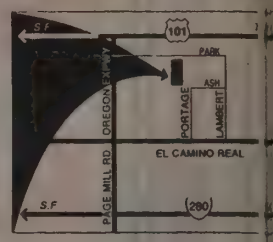

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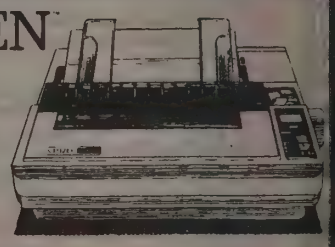

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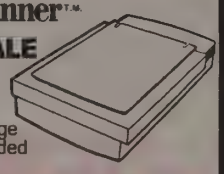

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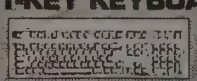

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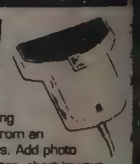

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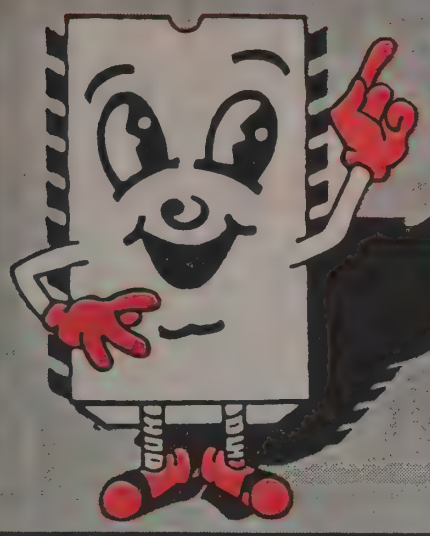

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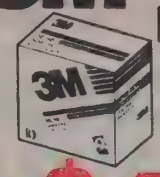

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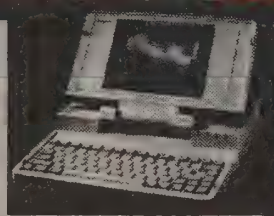

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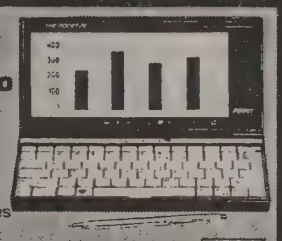

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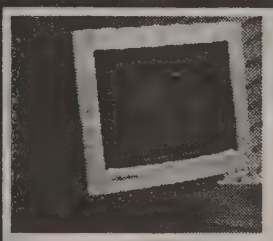

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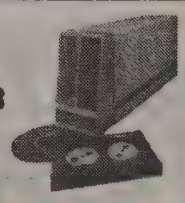

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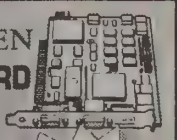

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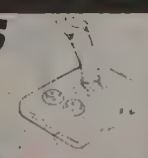

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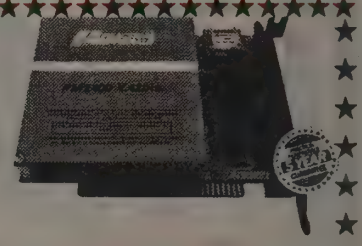

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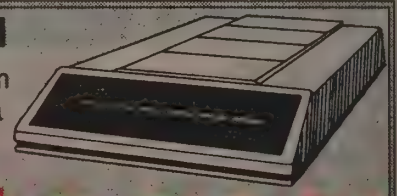

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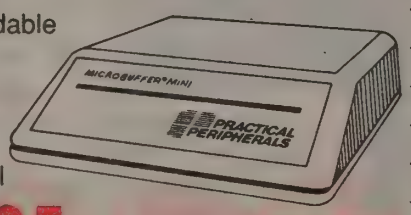

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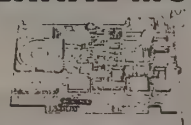

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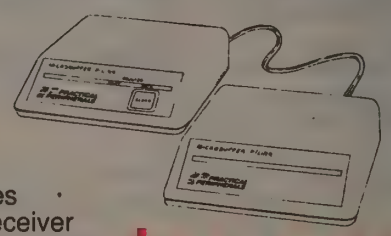

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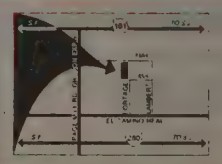

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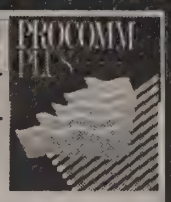

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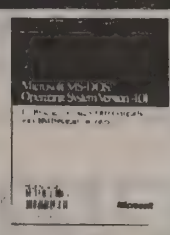

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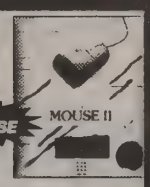

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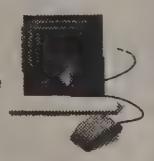

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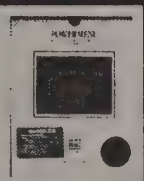

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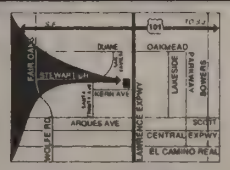

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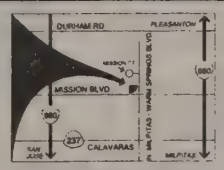

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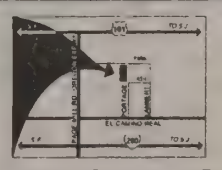

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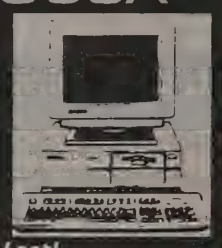

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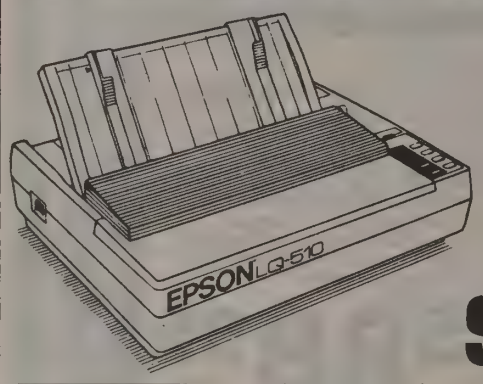

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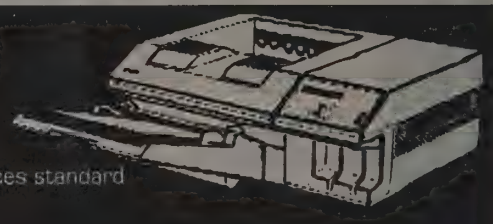

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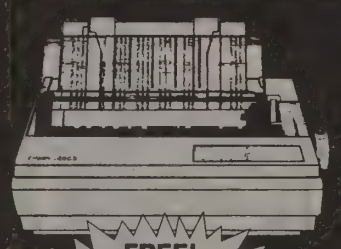

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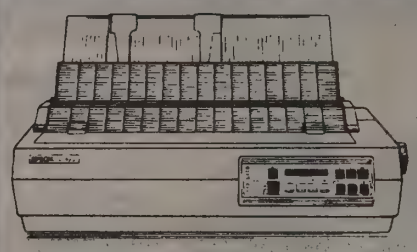

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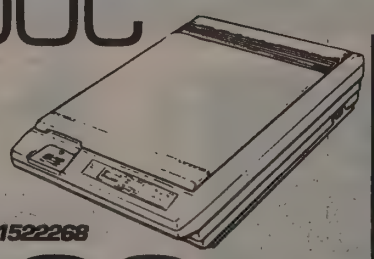

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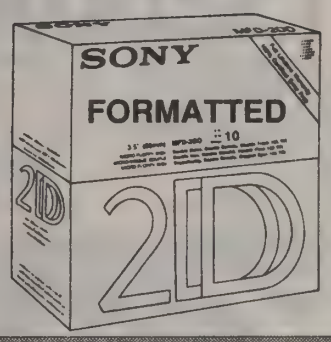

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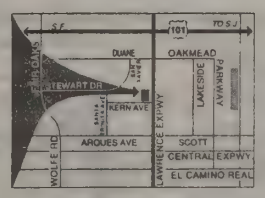

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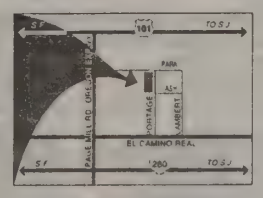

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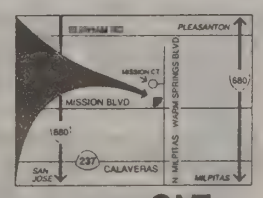

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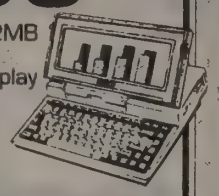

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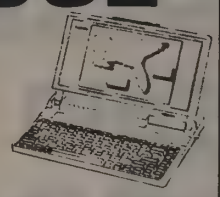

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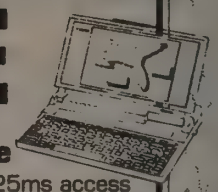

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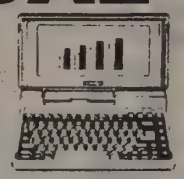

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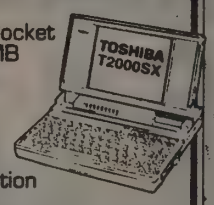

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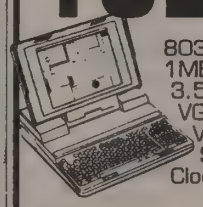

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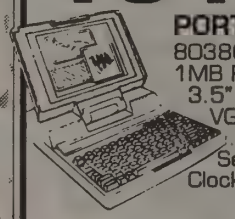

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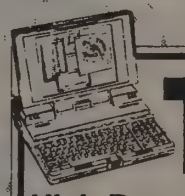

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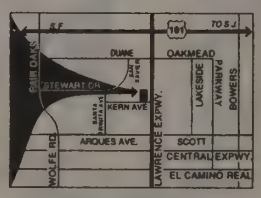

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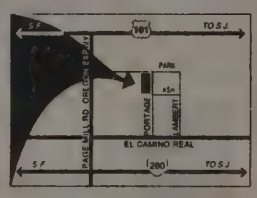

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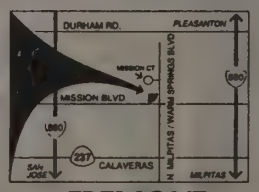

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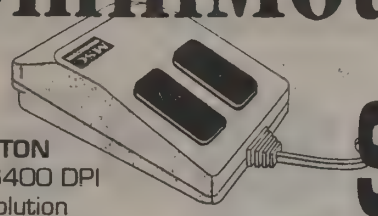

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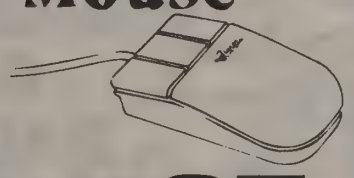

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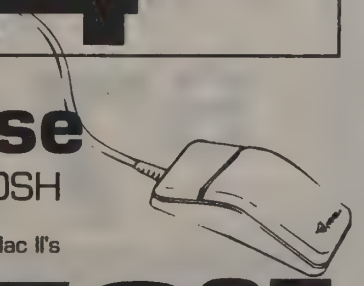

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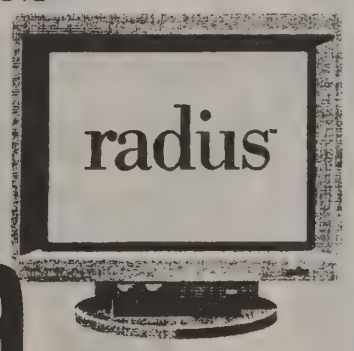

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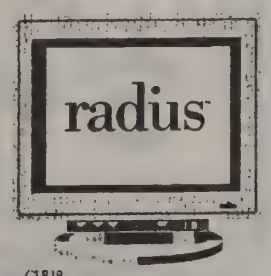

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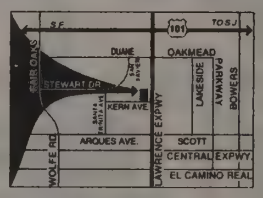

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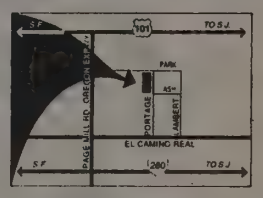

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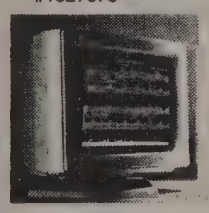

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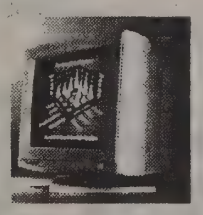

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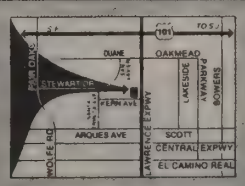

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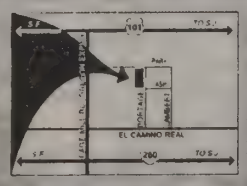

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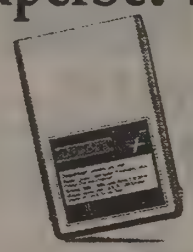

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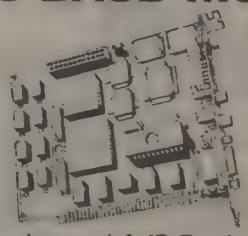

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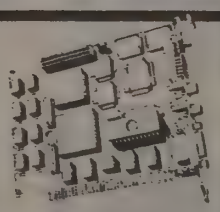

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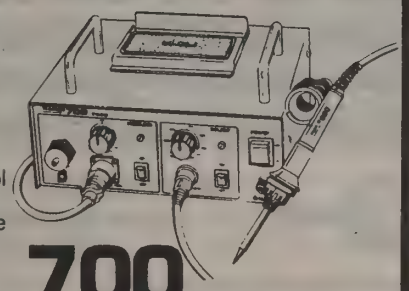

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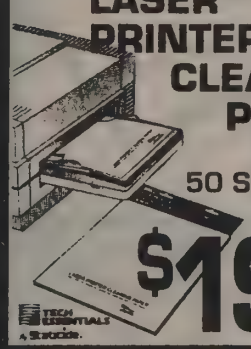

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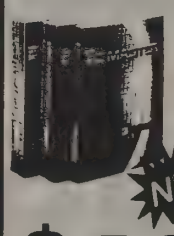

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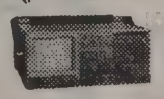

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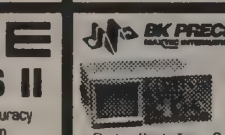

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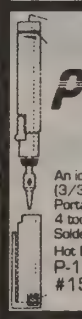

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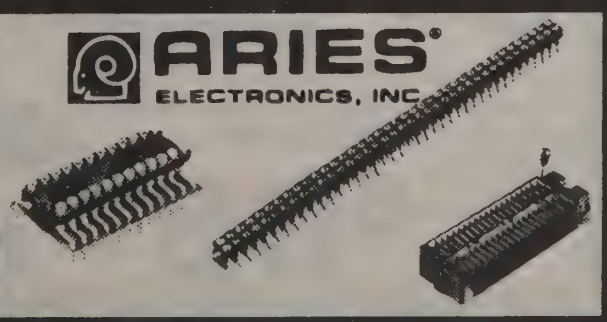

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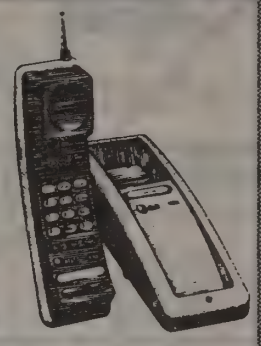

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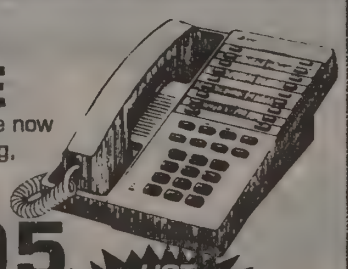

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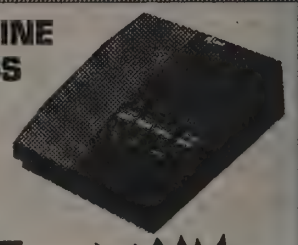

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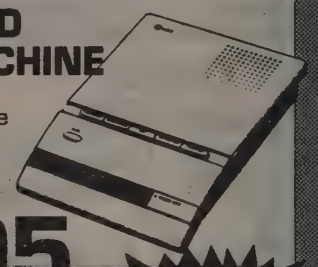

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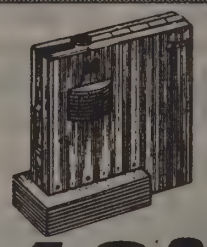

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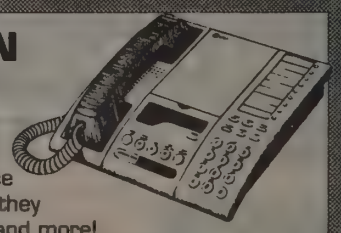

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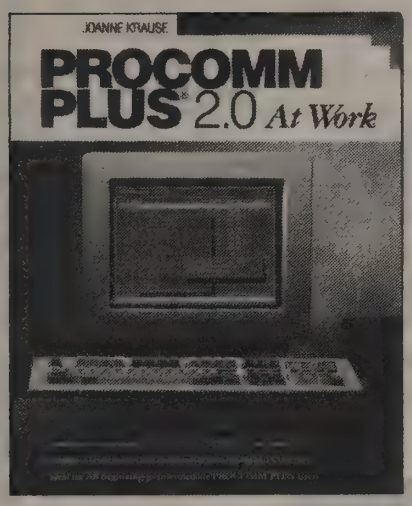
VOICE TIME/DATE STAMP

PRODUCT SPOTLIGHT

Continued from page 122

word processing functions that are performed in a typical business office, although they are just as useful in any situation that requires advanced word processing capabilities. ($19.95) *Microsoft Word for Windows Made Easy,* Paul Hoffman, Osborne/McGraw-Hill, Inc., 2600 Tenth St., Berkeley, CA 94710. (415)548-2805.



PROCOMM PLUS 2.0 AT WORK

PROCOMM PLUS is one of the most widely used telecommunications software packages. The current version, 2.0, contains may new features, including support for twenty-five different terminal emulators, as well as new and enhanced features to the Dial Directory. *PROCOMM PLUS 2.0 at Work* offers comprehensive coverage ranging from getting started with basic functions to using advanced functions and the PROCOMM PLUS Script Language. The appendices include a quick reference, an ASPECT command reference, a guide to troubleshooting, and other supportive materials. ($19.95) *PROCOMM PLUS 2.0 at Work,* Joanne Krause, Addison-Wesley Publishing Co., Reading, MA 01867.

GAMES REVIEW

By Mike Markowitz

TESSERAE

Published By: Inline Designs
For: Macintosh
List Price: $49.95

Inline Design is a new game publisher focused on the Macintosh. The games are 32-bit clean, MultiFinder friendly, and not copy protected. Tesserae is an abstract strategy game based on the combining properties of primary colors. It is also the Latin name for the multicolored cubes of stone or glass that make up a mosaic. The game is playable on monochrome systems because each color of tile also has a unique symbol—circle for red, cross for yellow, square for blue. Yellow and red, for example, combine to make orange, represented by a cross in a circle.

To play the game you select one of nine boards, and the program randomly fills the board with tiles. The object of the game is to remove as many tiles as possible in the fewest moves. There are some rather complex rules governing what can jump over what, and what happens when one tile lands on another. The player is helped enormously by a smart cursor, that turns into a cross whenever you move the mouse over a tile that has at least one legal move. Click the mouse, and black circles appear on every legal destination square. Click the black circle and the move is executed.

Beyond a simple leaflet that explains how to install the game, documentation is in the form of Online help. I used a screen-dump program (called Capture) to print out a few pages I wanted for quick reference. It would have been helpful if the program had a function to print out the documentation, but the program disk is almost full.

Tesserae is an abstract strategy game based on the combining properties of primary colors. The game is playable on monochrome systems because each color of tile also has a unique symbol—circle for red, cross for yellow, square for blue.

Tesserae's color graphics are excellent, sound effects are used effectively, and the game is challenging and fun at many levels of difficulty. I would not recommend it for monochrome systems—color is too much a part of the game's look and feel. Tesserae should appeal to players of all ages, especially those who love games like Tetris and Ishido.

WARLORDS

Designed By: Steve Fawkner
Published By: Strategic Studies Group
For: IBM PC (640 K, EGA, VGA only), and Amiga (1MB); Macintosh and Atari ST versions are also planned
List Price: $50

Warlords is a strategy game designer's novel approach to the familiar and ever popular territory of swords and sorcery, castles and dragons. The game can be played by up to eight players, with the computer taking any positions not filled by human players. To win you have to eliminate all the other players and control all eighty cities in the land of Illuria.

The game has a very functional and attractive screen layout with a strategic map, a tactical display, a series of buttons for various commands, and an information window. There is a pull-down menu bar across the top that provides clear and logical control of various game functions.

For the Dungeons and Dragons crowd, Warlords should provide hours of challenging entertainment.

You can raise and train sixteen different kinds of armies, using your Heroes to lead them in attack and defense of castles. There is a good forty-page manual. The IBM version fits on three 5.25" disks, and includes a multicolor reference map. For the Dungeons and Drag-

Continued

ons crowd, Warlords should provide hours of challenging entertainment.

CARL LEWIS: GO FOR THE GOLD

Developed By: Bud Pembroke
Published By: GameTek
For: IBM PC and compatibles (CGA and 256K or EGA and 512K)
List Price: $30

This is a simulation of the Olympic Decathlon for fearless keyboard athletes who are not concerned about repetitive stress on their middle and index fingers.

Go for the Gold is a good value for any PC user interested in track and field.

This game can be played with up to five players, it keeps detailed performance records, and can save a game in progress. There is a "practice" mode that lets you build up agility before entering competition. The game is simple enough for a four-page leaflet to provide complete documentation. The events include long jump, shotput, high jump, 110-meter hurdles, discus, pole vault, javelin, 100-meter and 400-meter sprints, and 1500-meter run.

You "run" by alternately pressing the <K> and <J> keys. For shotput, the sequence is <Enter> to get set, <K> to step, <I> to turn, <L> to throw and <H> to stop (but not too soon). Other events have equally clever keyboard mappings. Carl Lewis's smiling face appears with dialog boxes full of encouragement when you fall on your face. The animation is simple but effective, and the game is packed with information about real-world rules, records, and the career of Carl Lewis.

Go for the Gold is a good value for any PC user interested in track and field. GameTek has also released a "Harlem Globetrotters" basketball simulation.

NEWS AND RUMORS

Brøderbund is about to release The Treehouse, a follow-up to their preschool blockbuster The Playroom. Software Toolworks has announced (for PCs and compatibles) Life and Death II: The Brain, which lets the surgeon wannabe tackle a subdural hematoma, brain tumor, or aneurysm, to the accompaniment of wise-cracking morgue attendants and gossiping interns.

Disney Software's spring lineup includes Arachnophobia (MS-DOS and Amiga), Mickey's Jigsaw Puzzles, and Dick Tracy—The Game.

Send your game news, rumors and howls of anguish to: Mike Markowitz, 550 Orange Ave., #150, Long Beach, CA 90802. Email: MOUSKOWITZ on America Online.

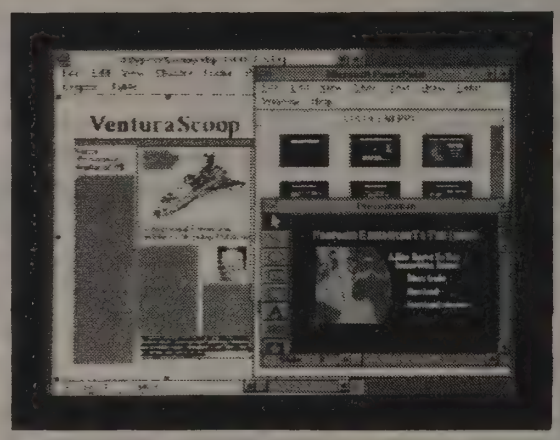
WINDOWS REVIEW

POWERPOINT FOR WINDOWS

Manufactured By: Microsoft
List Price: $495
Reviewed By: Lenny Bailes

When I started using the Macintosh version of Powerpoint to create a slide presentation for a graphics class, I discovered that Powerpoint is designed for the nontechnical user who wants to make something look impressive in a hurry. The templates and sample presentations, which come with the program, are meant to be taken apart and reused. It's easy to create slides from scratch. Also, you can point the cursor anywhere and type in bulleted sentences.

Setting background, foreground, and supplementary (accent) colors is a menu-driven process. Special gradient shading options can be chosen as you pick the color scheme. Working in color is 90% of the fun with Powerpoint. A Mac II with only 1MB of RAM is still able to run it in 256 colors and import some PICT2 graphics before getting warnings about lack of memory.



My PC at home has over 5MB installed, so I got a brilliant idea and decided to ask Microsoft for their working model of Powerpoint for Windows. Microsoft is currently offering free functional demos for all of their Windows products.

I was duly impressed by this package when it arrived. The Microsoft Working Model of Powerpoint includes its own runtime version of Windows 3.0. You don't need to own Windows 3.0 to evaluate this product. I installed Powerpoint with the full version of Windows already on my hard disk to take advantage of my pre-installed 256-color drivers.

Powerpoint for Windows requires at least 256K of extended memory, and runs only in Standard or 386 modes. I was pleased to find that its interface is identical to the program I learned on the Macintosh. Also, Powerpoint's layout features are similar to PageMaker's. A master slide template contains elements common to all slides in the show. The tools palette lets you draw lines, circles, rectangles, and rounded rectangles within the program. Individual paragraph styles can be defined and applied to freeform clumps of text.

Bitmaps and Windows Metafiles can be pasted in through the clipboard. PC Paintbrush, TIFF, CGM, Micrographx Designer, and Encapsulated Postscript files can be read in from disk. An Excel or Lotus spreadsheet can be used to automatically generate a graph.

Windows Powerpoint has an extra color manipulation option not included on the Mac. The first sixty-four col-

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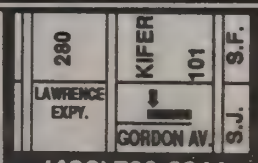

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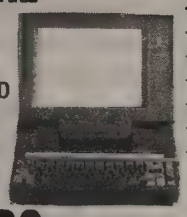

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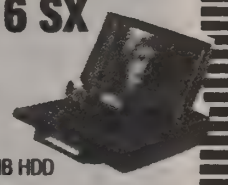

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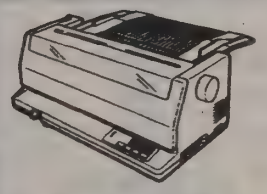

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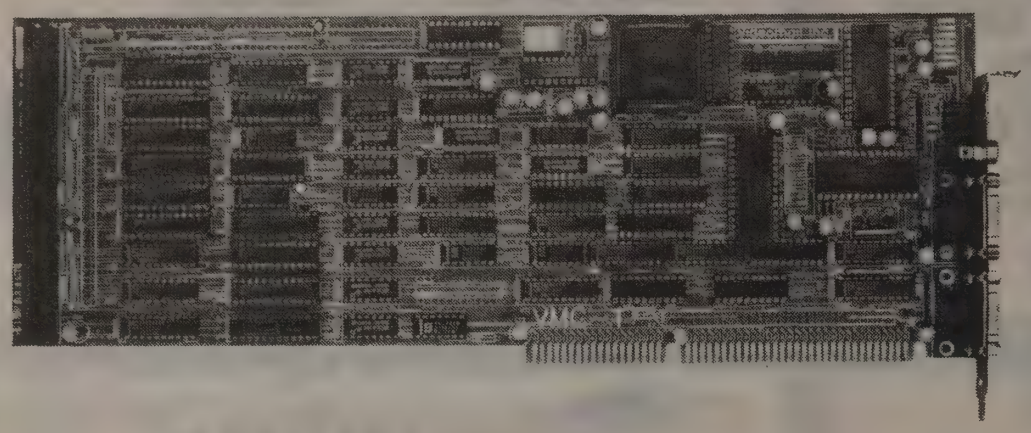

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ors of any image can be replaced with substitutes from the color palette. The program lacks Aldus Persuasion's special transition effects, but fades can be simulated by changing the lighting of the slide background.

Powerpoint's biggest allure to me was that presentations saved on the PC could be transferred to the Mac version via an Apple File Exchange module. I discovered this to be somewhat problematical. The documentation for the translation utility says that it will work on any Mac from an SE on up using System 6.0.3 or higher. In my experience, System 6.0.4 was required, and 2.5MB on the Mac SE were not sufficient to allow translation of color presentations. I had to take my PC disks to a Mac II with 4MB for the translation to work without "out of memory" messages.

All of the built-in Powerpoint graphics, the text, and the backgrounds were converted successfully to the Mac. Some of the 256-color GIF files in place on the slides became corrupted. I had pasted the bitmaps into Powerpoint through the Windows clipboard with a shareware fileviewer called WINGIF.

I was able to repaste the GIFs into Mac Powerpoint by loading them in Vision Lab, a Macintosh fileviewer. (I suspect that the GIF corruption was due to even 4MB of RAM being borderline for the AFE file translation).

The working demo won't let slides be printed, but you can save any presentations you make and use them with the full-featured version. The full-featured Powerpoint includes more templates and presentation samples, as well as a spelling checker and extensive on-line help.

Powerpoint is really a painless way for a novice to build impressive looking presentations. (Microsoft Corp., One Microsoft Way, Redmond, WA 98052. 1-800-323-3577)

WINFAX

Published By: Delrina Technology, Inc.
List Price: $69
Reviewed By: Woody Liswood

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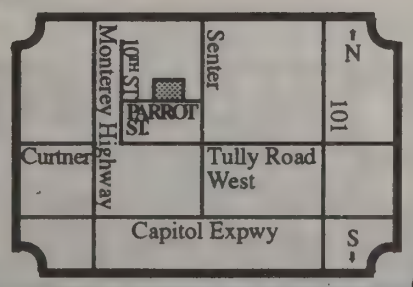

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PRODUCT SPOTLIGHT

Without much ado, Winfax will convert your Windows document and send it out as a fax.

create a document under a Windows program, you select Winfax as the printer. When you print the document, Winfax queries you for a fax phone number, converts the document to a fax document, dials the number, and sends the fax. Yes, it is that easy.

Here is a before and after example.

Before, I had a Complete PC Fax/Modem. I also had a couple of different scanners around, including the Complete PC Page Scanner. I would create the document. Then, if there were no graphics involved, I could print the document to disk. If I wanted graphics included in the document, I had to use one of the support printers from the fax program. Normally an Epson driver of some sort. Then I would load the background program of the Complete PC. Next, I would run the Complete Fax program, convert the text file to a fax file. Lastly, I would pick the newly created fax document and tell the fax program to send it along. If I had a document with proportional type and graphics and I did not want to use one of the supported printer drivers for the Complete PC, I would print the document on my HP LJ II. Next, I would scan it. Then I would convert the scanned image to a fax file, run the fax program and fax it.

After I installed Winfax, I just do as in the first paragraph. I create the document. When I am done, I select Winfax as my printer driver and print it. Winfax does all the rest.

When you create your document, if you know ahead of time that you are going to fax the document, use printer setup under the file menu and select Winfax as the printer. This way you always use the Winfax fonts for screen spacing and get a better WYSIWYG than if you create the document as you normally would and then select Winfax after you are done. I selected Winfax after creating a document with the PostScript driver and using one each of all the PostScript fonts. When I sent that fax, Winfax converted all the fonts to some close equivalents, but it was not anywhere near a 100% type face conversion.

Since Winfax is a true multitasking Windows application, it will work and send from the background after you have printed your document to Winfax.

After you start to print your document to Winfax, you get another dialog box. You must enter a name and destination fax number. There is also a telephone book so that you can create and send documents to multiple folks and not have to rekey anybody after you send them their first fax. And, lastly, you can enter a prefix so that you can wind your way through pbx and hotel systems that require something more than picking up the phone and dialing to connect. The phone book lets you record name, fax number, and some comments. In addition to individual entries, you can create groups of numbers to send the same fax to lots of folks.

You can also set the time and date for the fax to be sent. Yes, Winfax will wait around for that time and day to send the fax. Lastly, you can have Winfax save the current document to a separate file so that you can fax it to someone else later without having to convert it to fax format again, and you can attach any previously created fax file to the current document and automatically send it.

If you run Winfax from the Program Manager Group, you find the Winfax administrator menus. You can edit any of the installation defaults from this menu structure as well as review an activity log and status.

Since Delrina also publishes PerFORM, there is a section in the documenta-

Continued on page 148

SPECIAL SPECIAL SPECIAL SPECIAL SPECIAL SPECIAL

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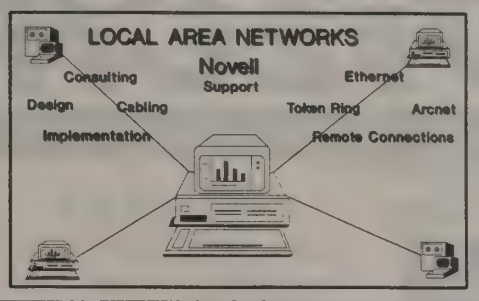

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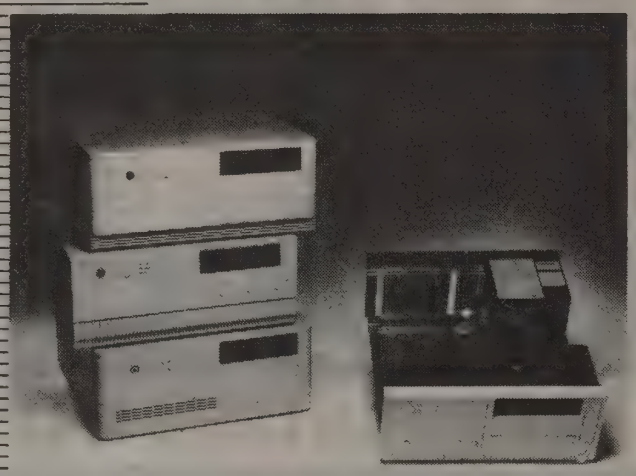

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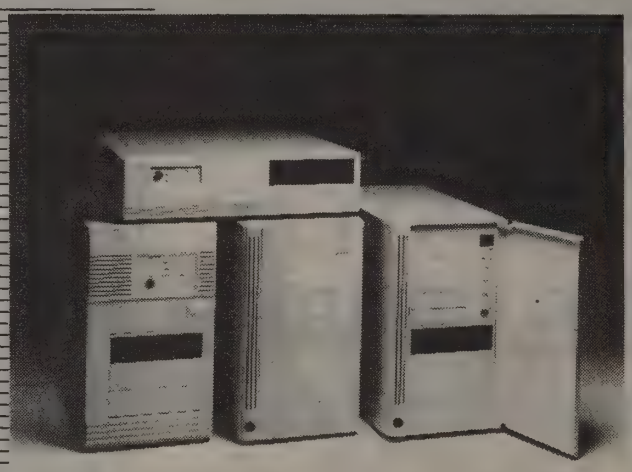

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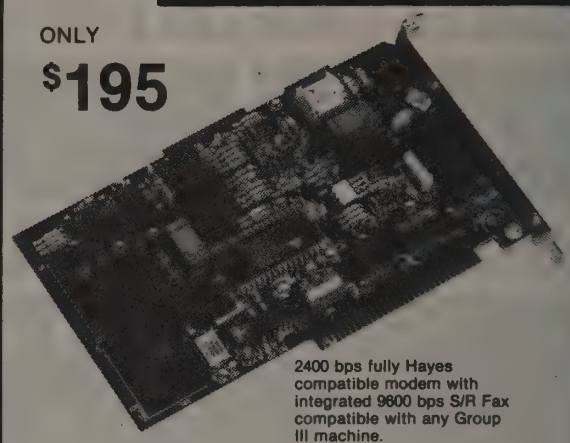

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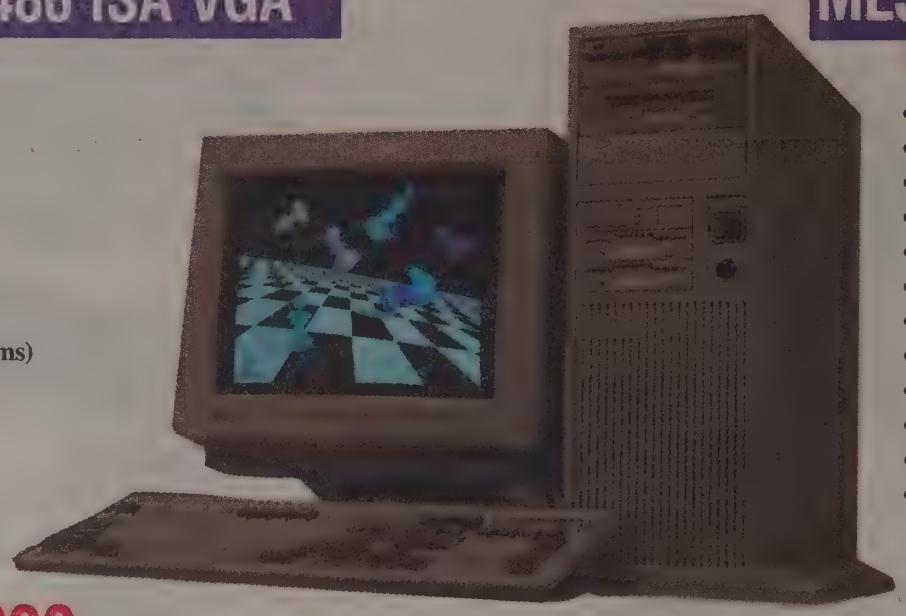

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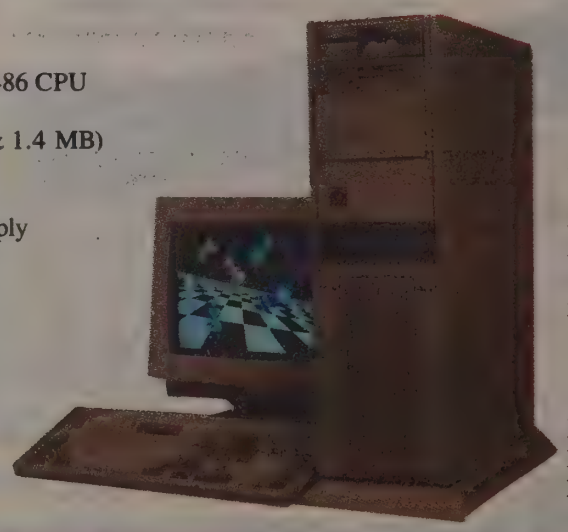

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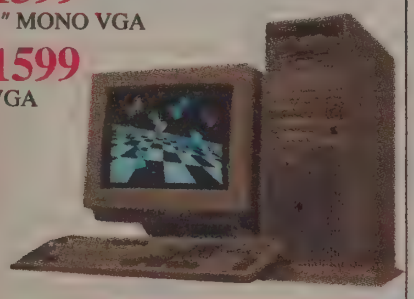

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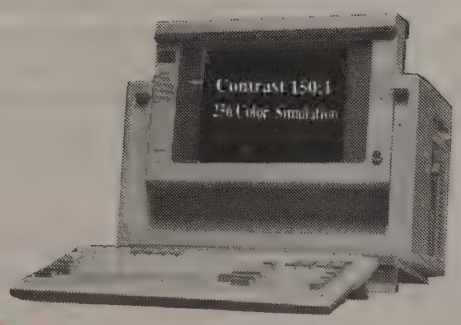

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Continued from page 142

tion about how to combine FAX and FORMS into a faxable form.

All in all, Winfax is a necessary addition to my Windows environment. If you have a fax modem which uses the Sierra Chipset, you should add Winfax to your environment also, assuming that is, that you have the need to send faxes to someone. (Delrina Technology, Inc., 15495 Los Gatos Blvd, #8, Los Gatos, CA 95032. 1-800-268-6082)

INTERMISSION & CURTAIN CALL

Published By: ICOM Simulations
List Price: $49.95
Reviewed By: Woody Liswood

This is a must have set of programs if you use Windows. Don't wait. Get it today. Intermission is a screen saver. Yes, if you leave Windows alone for five minutes or so, Intermission will do something to your screen. And that is the point: There are thirty-two different things it will do when blanking your screen. And, among those thirty-two different things, you can modify and manipulate to your heart's content. In fact, folks come into my office now, to see what the next screen save routine will be, since I have my selection on random and let Intermission choose what it wants to display.

Intermission, rather than just blanking the screen, has a variety of different displays so that things happen on the screen. You can have a rotating and bouncing three dimensional box and even control the rate at which it spins. Bacteria lets your screen look like that petri dish full of experiments you did in school. Dissolve takes away your screen pixel by pixel. Dragon Kites gives the impression of being at the park on a windy day, and you can choose the number of kites on the screen together and how windy you want it to be. Eyes creates a pair or more of eyeballs that travel around the screen looking at each other.

If you don't want to have everything random, you can view and test each of the screen savers and turn on or off only the ones you want to use.

Curtain Call is a utility which randomly chooses the Windows Wallpaper each time you run Windows. There are not a lot of options. You can tell Curtain Call what directory to use, and whether you want the display centered, tiled, or use the current default size.

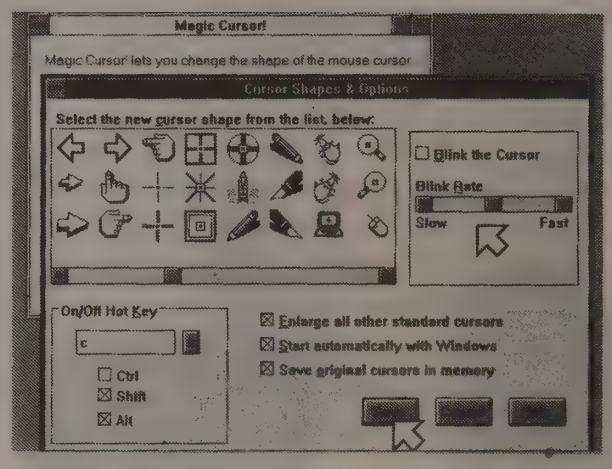
All in all, a nifty little utility. Load both programs. Try them. You'll like them. (ICOM Simulations, Inc., 648 S. Wheeling Rd., Wheeling, IL 60090. 708/520-4440)

MAGIC CURSOR

Published by: Fanfare Software
List Price: $49.95
Reviewed By: Woody Liswood

If you like doing things to cursors, you'll love Magic Cursor. Running under Windows, Magic Cursor will let you enlarge, customize, blink and otherwise control the cursor to be the size and shape that you like.

Magic Cursor v3, which I am using, has fourty-four specially designed cursors, including a wide variety of sizes of arrows, cross hairs, pen or pencils, mouses, tanks, airplanes, one rocket, and some weird creatures. Each of the options with the exception of the rocket, can be pointing to the right or the left.



I really liked it on my laptop. I used the largest arrow cursor available and increased the blink rate so that I could instantly find the cursor regardless of where it was on the screen.

Installation is typical of a Windows program. Boot Windows, then Run Install from the drive you placed the floppy disk. Magic Cursor creates a subdirectory on your disk which contains the program. It will also insert itself into your WIN.INI file so that it will load automatically each time you boot Windows.

Magic Cursor only has a couple of functions. You can turn it on or off, and you can pick the cursor and blink rate you want. You can also have Magic Cursor enlarge all the other cursors which are created and used by the application programs you are running under Windows. Lastly, you can define a hot key to turn on Magic Cursor from within any Windows application. However, if you chose to use a hot key to turn off Magic Cursor from within a program, you must also instruct Magic Cursor to save the original cursors in memory. If you don't, the only way to get back to the original cursors is to reboot Windows.

A necessary utility for the Windows Environment. If you don't like the Windows cursor, or have difficulties finding the cursor, Magic Cursor is for you. (Fanfare Software, Inc., 9420 Reseda Blvd., Suite 828, Northridge, CA 91324. 818/886-8787)

PRINTCACHE V2.3

Published By: LaserTools Corp.
List Price: $149
Reviewed By: Woody Liswood

PrintCache is a print spooler. It grabs the information your program is sending to a printer, stores it in mem-

Continued on page 154

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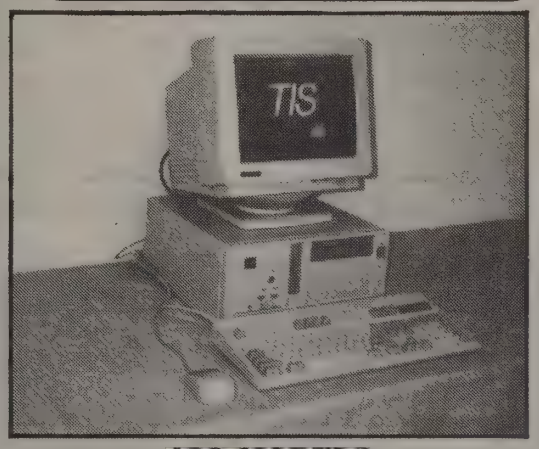

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PRODUCT SPOTLIGHT

Continued from page 148

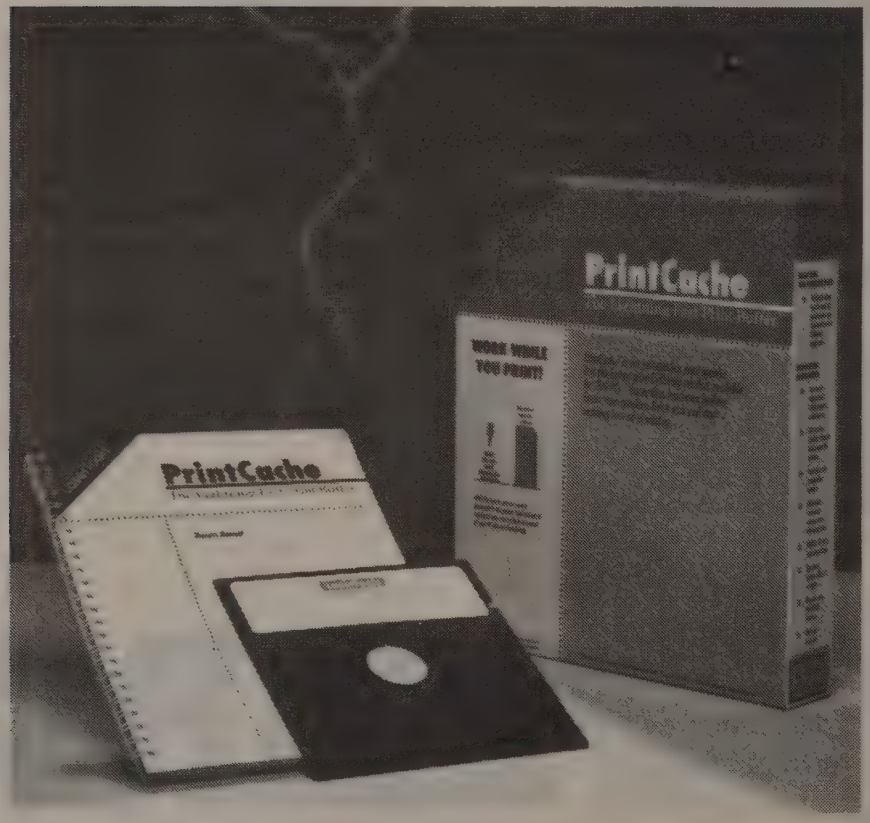
ory, or on disk, working as fast as your application can send it, then it sends the information to the printer at the slow speed the printer can accept while your application goes back to doing your work.

With hundreds of spoolers on the market, what makes PrintCache stand out? Two things. First, it appears to be the fastest on the market. I've tested a number of print spoolers. They all work. The fastest is PrintCache. Second, it works nicely with Windows 3.0.

There is, however, one problem using PrintCache with PostScript under Windows. PrintCache works great with the normal Windows PostScript drivers. Micrografx supplies its own driver with Charisma. That driver does not work with PrintCache. It just ignores it.

Installation is simple, but rather primitive by today's standards. You must make a directory to hold the files, change to that directory, copy the files, then run install to configure PrintCache to your computer and printer. Most programs would just have you log onto the A drive, type install, and let the program do everything. Tsk, Tsk.

During the installation you must also select a printer, identify the port where it is connected, identify an IRQ if necessary, and determine the size of the buffer where the data will be stored. PrintCache takes an area of your hard disk and places a special buffer file there so that it always



knows what and where to keep your data. It does, however, take up a permanent part of your hard disk storage. Remember to defragment your disk before you install PrintCache so that it loads properly. As part of the setup process, you can test the port and printer to insure that PrintCache will communicate correctly with the hardware.

PrintCache can be loaded to only cache the printing, or be called up using a hot key. Most likely, you'll load it through the AUTOEXEC.BAT file. Make certain that you load it last, so that if you need to get rid of it, you can unload it. Yes, like all good TSRs are supposed to do, you can unload PrintCache from memory if you need to recapture its space. You can't, however, recapture the disk buffer easily. You must first rerun the setup program and do away with the buffer file. Not a big deal, but you need to remember that you have this file out there so you can regain disk space if you need it.

I only had one problem with PrintCache as it relates to Windows. PrintCache specifies that for speed purposes, you should always print to LPT1.PRN rather than to LPT1. Midway through testing and working with PrintCache I installed the Adobe PostScript cartridge on my HPLJ II. The instructions there said to print to LPT1.OS2. HUMM, what to do. PrintCache does work correctly with the LPT2.OS2 printer under Windows. So away I went; then I started getting timeout problems with the Adobe Cartridge. I had set the PostScript timeout to 600 seconds. I finally got everything to work correctly by setting the timeout to 999 seconds. More or less, timeout does not work with both the Adobe Cartridge and PrintCache. Then, as mentioned earlier, the PostScript driver supplied by Micrografx bypasses PrintCache and prints directly to the port.

There is an extensive discussion in the documentation about working with serial ports. Also covered, are problems in working with digital plotters. I tested PrintCache with my Fujitsu plotter which emulates an HP 7475A. I tried both serial and parallel ports and had no problems. It was nice to regain control of the program while the plotter still had about thirty minutes of effort.

All in all, PrintCache is one of those utilities that you should always have around. Under Windows, I would consider PrintCache a necessity. In fact, I would not drive Windows without it. (LaserTools Corp., 1250 45th St., Suite 100, Emeryville, CA 94608. 415/420-8777)

PC SOFTWARE REVIEW

SIDEKICK 2.0

Published By: Borland
List Price: $99.95 (Introductory price $69.99)
Reviewed By: Peter John Harrison

If you have trouble keeping track of projects and appointments, or if your workday is punctuated with writing quick memos and making phone calls, you might consider buying Sidekick 2.0.

Sidekick was one of the first Terminate Stay Resident (TSR), or pop up, programs and is easily the most popular TSR program on the market. With the touch of two keys, Ctrl-Alt, Sidekick moves you instantly from whatever program you're working on to it's Notepad, Phone Book, Calculator, or Calendar. Once in Sidekick you can write quick memos, find phone numbers, add a column of numbers up, or check your schedule before popping back to your program and picking up where you left off.

Sidekick 2.0 expands on the older Sidekick with slick Windows-like screens, mouse support, on-line help, and

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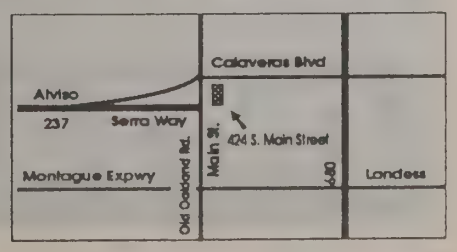
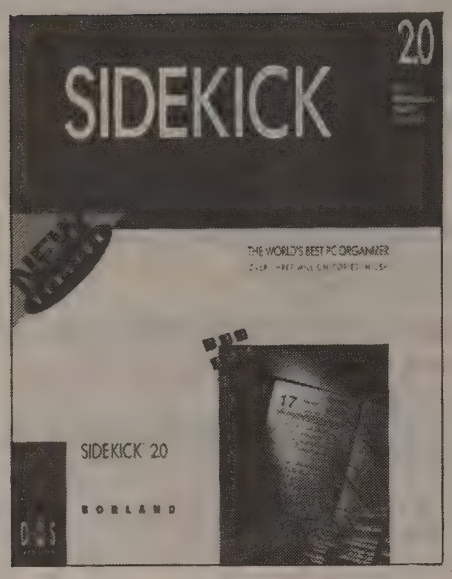


a lot more power. The Notepad has been expanded to resemble a mini word processor, complete with spell checker and thesaurus, the Phone Book now works like a Rolodex card file, there's a "printing" Calculator with business, scientific, and engineering formats, a Time Planner, and a Communications feature that supports text and XModem file transfers.



Worthy of special notice is the Time Planner, which allows you to set appointments, create "to-do" lists, and attach notes to them so you can track what you're doing. Items in the Time Planner or Phone Book can be printed on plain paper or in popular Pocket and Filofax organizer formats. The Time Planner is a boon to anyone with busy schedules to organize or track.

Sidekick 2.0 fits in a slim 35K of RAM, so even large applications should be able to coexist with it in memory. It's a great little program for just under $100. (Borland International,Inc., 1800 Green Hills Rd., PO Box 660001, Scotts Valley, CA 95067-0001. 1-800-331-0877)

HYPERDISK V4.11

Manufactured By: Hyperware
List Price: $35 non-commercial, $69 commercial
Reviewed By: Lenny Bailes

Good disk-caching software makes an old, slow hard drive perform like an expensive new one. Hyperdisk is state-of-the-art in a field filled with competition that includes PC Tools, The Norton Utilities, V-Cache and Super PC-Kwik. And Hyperdisk is Shareware; you can evaluate it by downloading it from a bulletin board or by purchasing disks from your local Shareware vendor.

Hyperdisk is the champ when it comes to memory management. The package includes separate programs for conventional, expanded or extended memory, plus modules optimized to run specifically on 286- or 386-based systems. Hyperdisk can be run as a command-line utility or placed in the Config.sys as a device driver. It has a built-in "Shadow RAM loader" which reduces conventional memory overhead for the cache to less than 2K.

Version 4.11 of Hyperdisk is fully compatible with Windows 3.0 and DESQview. It can be substituted freely for the disk cache bundled with Windows. On some systems Hyperdisk is a more reliable cache than Microsoft's Smartdrive. Hyperdisk automatically coexists with third-party partition managers like Disk Man-

Continued

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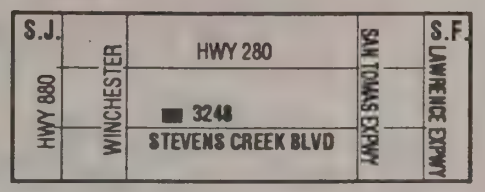

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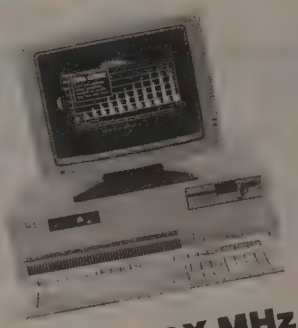

Hi-Q 20/16 DX MHz 386 SYSTEM

Landmark = 19.5 SI = 18

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- 101 Key Keyboard
- Supports-MS DOS, OS/2, PC-MOS/386, UNIX, XENIX, DR, DOS, Concurrent DOS 386
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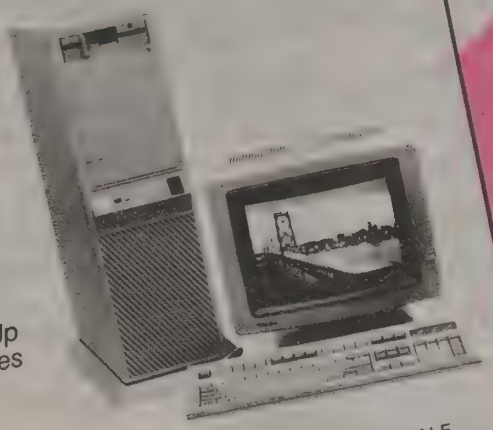

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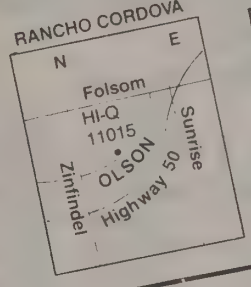

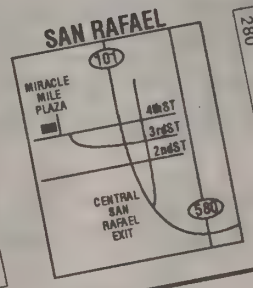

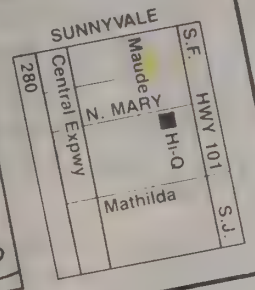

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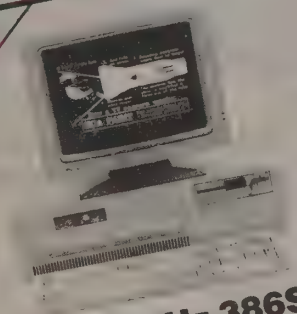

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Landmark = 22.6 SI = 18.7

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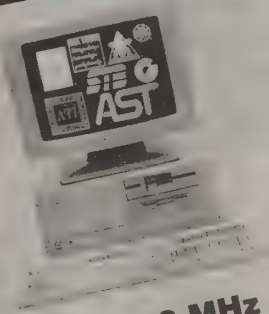

Hi-Q 12 MHz 286-AT SYSTEM COMPLETE SYSTEM
Landmark = 15.9 SI = 13.4

20 MB HARD DISK

- 1 MB RAM Expandable to 4 MB
- 1.2 MB or 1.44 MB Floppy Drive
- 1:1 Interleave IDE Hard/Floppy Disk
- Real Time Clock/CMOS Memory w/Battery Back-up
- 230W Power Supply & Quality Case (full or baby size)
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- 12" Mono Monitor

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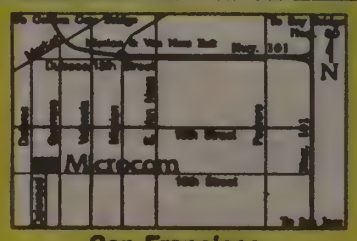

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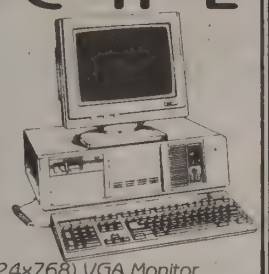

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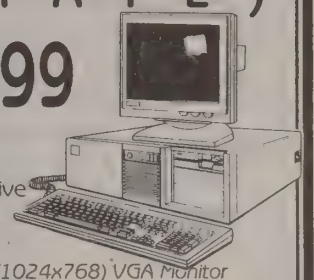

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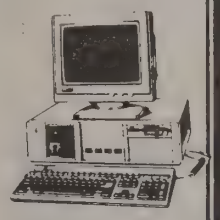

Monitor Options

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VGA Monitor with 16 bit Card 379
Super VGA (1024x768) VGA Monitor with 16 bit Card 455

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(0 WAIT STATE)

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- Real Time Clock with Battery Backup
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- 101 Extended Keyboard
- 1.2 MB TEAC Floppy Drive
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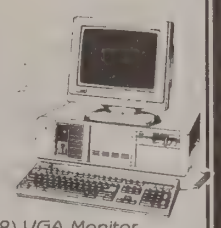

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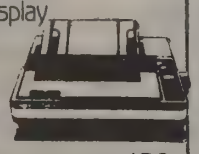

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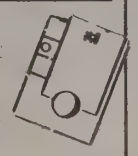

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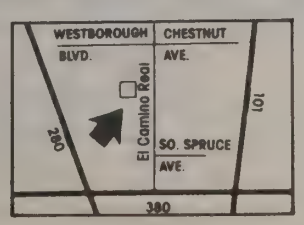

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ager and SpeedStor. The cache supports drives with up to 256 heads and 1024 cylinders or 64 heads and 4096 cylinders (or well over 400MB of storage space).

Hyperdisk can be modified on-the-fly after installation. Hot key and command line options allow the cache size to be decreased, or allow the cache to be turned off. Caching can be limited to specified hard or floppy drives. Performance can also be adjusted to conform to different controller cards.

If Hyperdisk reminds you of another caching package called FAST!, that's because author Roger Cross originally licensed his code to the people who made FAST! several years ago. That license is now discontinued, and Hyperdisk is the current version of Cross's work.

The documentation with Hyperdisk is clear and well-written. Hyperware also maintains a user bulletin board and technical support line. (Hyperware, Inc., Rt. 1, Box 91, Pal Mall, TN 38577. 615/864-6868)

STACKER

Manufactured By: STAC Electronics
List Price: $149 software version, or $229 with hardware board
Reviewed By: Birrell Walsh

Stacker is a hard-disk compression utility, giving you up to 70% more space on every hard disk you own.

The amount of compression varies. If you have more executable files and fewer data files, you get less compression. If you have more data files, you get better compression, because there is more air to squeeze out of data files.

The trick is to compress information as it goes onto the hard disk and to decompress it as it comes off. That means that only compressed information is stored

But isn't it slow? The time lost in compressing and decompressing the file is partially made up by the fact that less information has to move on and off the disk. If you buy Stacker with a hardware board, it is as fast or faster than ordinary disk access. If you buy the software only version—suitable for laptops—it is slower.

I used Stacker after having tried a rival product, Expanz! from InfoChip. The advantage of Stacker is that it stores all its information in ordinary DOS format. You can therefore use some DOS file tools on a disk with Stacker installed. You can not yet use unfragment utilities on the hard disk on which Stacker has been installed, although "They're working on it."

Installation is reasonably easy, and the technical support people know what they are doing. The value is excellent. (STAC Electronics, Inc. 1-800-522-7822)

GOFER

Published By: Microlytics, Inc.
List Price: $79.95
Reviewed By: John Cowen

Gofer, a text retrieval utility by Microlytics, is a diamond in the rough. Although it performs very well, Gofer is unfortunately hampered by its own human interface and documentation. Sheer frustration led me to write the following introductory paragraph for an imaginary document revision.

"Gofer is a PC compatible utility program which displays, retrieves, and searches for text in disk files. It targets all text files (or only files containing selected text strings), in a directory or directory tree, using a chosen wordprocessor or application program format. Gofer can be invoked as a normal DOS program or as a memory resident utility."

Gofer is easy to install and configure, but its combination of menus and hot keys is confusing. When mastered, however, they allow the user to:

- Designate directories from which to display, search, or retrieve text.
- Select all files or only files containing logical combinations of specified text strings; e.g., only files containing both 'France' and 'wine'.
- Display, print, or write the selected files to disk.
- Mark and export text. In memory resident mode, Gofer writes the marked text to the background application as if it were being entered at the keyboard.
- Reconfigure Gofer, change text format, or invoke a utility, such as compress data.

Once properly instructed, Gofer performs quickly (even on a 4.77 MHz PC) and reliably. While active, it requires between 70K and 182K of memory; while quiescent, as little as 8.3K. More memory allows faster searches of more files.

Gofer is a far better tool for locating and accessing text from within a wordprocessor. (Microlytics, Inc., Two Tobey Village Office Park, Pittsford, NY 14534. 716/248-9150)

MACINTOSH SOFTWARE REVIEW

MULTI-AD SEARCH

Published By: Multi-Ad Services
List Price: $199.95
Reviewed By: Matthew Leeds

It's easy to accumulate graphic images when working in multimedia or desktop publishing. Scanned images, frame-grabbed video, Illustrator files, clip art, the list seems endless, and the task of organizing and tracking

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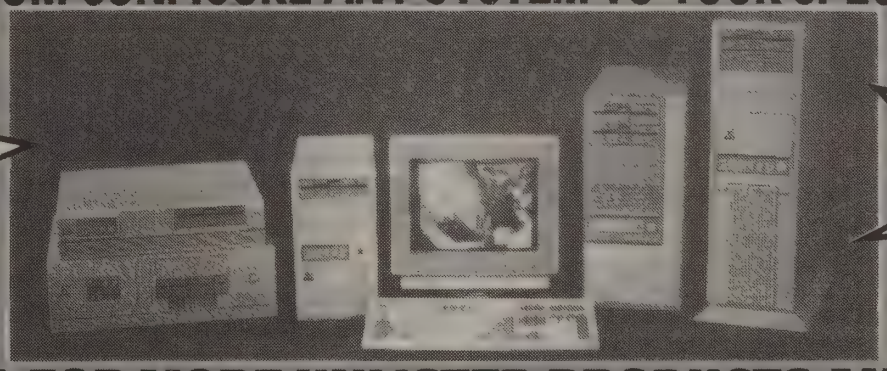

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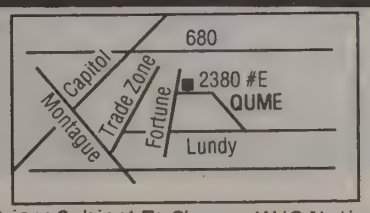

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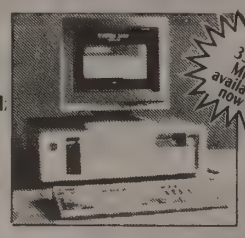

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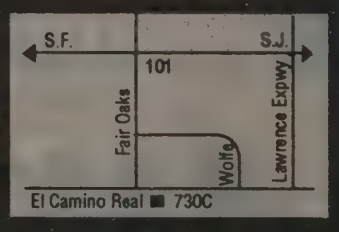

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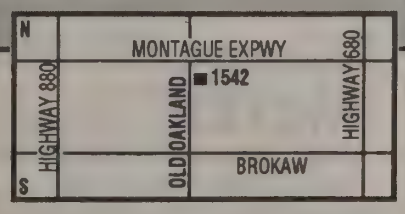

files often is. Multi-Ad Search is an image cataloging and retrieval program designed to make the job easy.

Search automatically searches through your existing collection of graphic files and creates a catalog of the images it finds. It creates a thumbnail-sized representation of each image in either/both color and black and white. Each catalog can contain up to 32,000 images, and any number of catalogs can be created. Catalogs can be merged if needed, and a single catalog can span several volumes, including floppy, hard disk, or CD-ROM sources.

Once a catalog has been created, you can enter keywords and descriptions for each file. You can search a catalog by volume, file type, keyword, file name, or for commercial art by expiration date. Search can be stacked to five levels, and some Boolean operators are available. A set of search criteria can be named, saved, and recalled.

Images in a catalog can be previewed when they are online and can be shown enlarged or reduced from 12.5% to 3200%. Thumbnails can be viewed on color or monochrome Macs, and Search does an excellent job of creating dithered black-and-white thumbnails of color images for viewing on monochrome Macs. You can print out the thumbnails or the original images and include their file name and size, location, creator, date created and modified, file type, and other data.

Search supports network environments, and up to 128 users can access a catalog. There are provisions for limiting access or editing privileges to a catalog. A Hypercard-based online help stack is included. Search can place images directly in some other applications, including Multi-Ad Creator and QuarkXpress. Search currently supports EPSF, TIFF, RIFF, PICT, and MacPaint files. An upgrade will soon add PhotoShop and perhaps others.

Multi-Ad makes efficient use of disk space. It doesn't create a duplicate of your original art, just a thumbnail. In one test I ran, I cataloged a folder with forty-two images, each about 100K in size. Search took about three minutes to process the files, and the resultant catalog was about 6% of the 4.2MB total. Search also gracefully handles very

Continued

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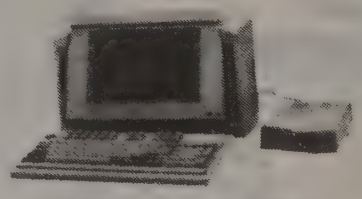

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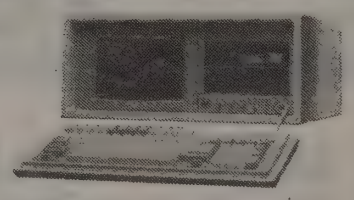

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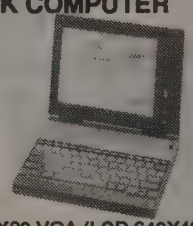

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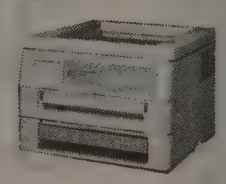

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- 101 Enhenced keyboard
- 80MB Hard Disk (18ms)
- One year Warranty Parts & Labor

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Seiko 1450 VGA	$645	Citizen color optional	$ 49	100MB Toshiba (22ms)	$439	Fax/modem 9600/2400	$195	Procomm plus	$ 95
NEC 3DS	$599	Fujitsu DL3400 (288cps)	$375	200MB Quantum (16ms)	$789	Everex 3MB exp. card	$129	QuattroPro/upgrade	$299/99
NEC 4D	$1150	Panasonic KXP1124	$265	200MB Maxtor (16ms)	$779	XT printerr/clock card	$29/25	Microsoft Windows 3.0	$89
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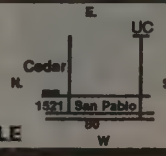

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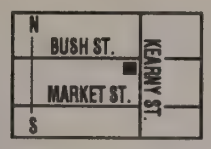

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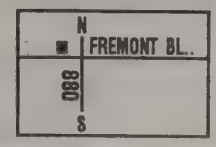

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- 2S/1P/1G Port
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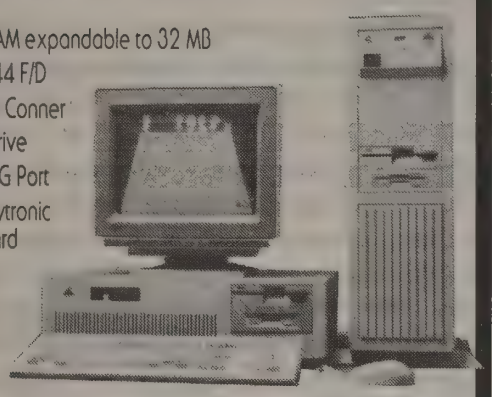

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Mono/Printer Card	$30
Paradise VGA 16 Bit 1024x768	110
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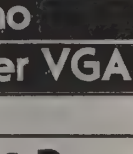
- 1.2 MB Floppy Drive
- 1:1 2 FD/2 HD Controller
- 2 Serial, 1 Parallel, 1 Game Port
- 230W PS w/Case Holds 5 Drives
- 101 Enhanced Keyboard

MONTHLY SPECIAL 386-33 MHz 64K CACHE

LANDMARK = 56
- 1 MB Ram Expandable to 8 MB
- Socket 80387 & AMI BIOS
- 1X32 Bit, 5X16 Bit, 1X8 Bit Slots
- Real Time Clock w/Battery Backup
- 1.2 MB Floppy Drive
- 1:1 2 FD/2 HD Controller
- 2 Serial, 1 Parallel, 1 Game Port
- 230W PS w/Case Holds 5 Drives
- 101 Enhanced Keyboard

MONTHLY SPECIAL 386-25 MHz 64K CACHE



LANDMARK = 43
- 1 MB Ram Expandable to 8 MB
- Socket 80387 & AMI BIOS
- 1X32 Bit, 5X16 Bit, 2X8 Bit Slots
- Real Time Clock w/Battery Backup
- 2S/1P/1GP
- 1.2 MB Floppy Drive
- 1:1 2 FD/HD Controller
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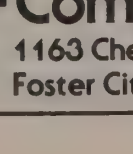

LANDMARK = 33
- 1 MB Ram Expandable to 8 MB
- Socket 80387 & AMI BIOS
- 1X32 Bit, 5X16 Bit, 2X8 Bit Slots
- Real Time Clock w/Battery Backup
- 1.2 MB Floppy Drive
- 1:1 2 FD/2 HD Controller
- 2 Serial, 2 Parallel, 1 Game Port
- 200W PS w/Case Holds 5 Drives
- 101 Enhanced Keyboard

$599 386SX-16 MHz

LANDMARK = 21
- 1 MB Ram Expandable to 4 MB
- Socket 80387 & AMI BIOS
- 6X16 Bit, 2X8 Bit Slots
- Real Time Clock w/Battery Backup
- 1.2 MB Floppy Drive
- 2 FD/HD Controller
- Serial, Parallel, Game Port
- 200W PS w/Case Holds 5 Drives
- 101 Enhanced Keyboard

$399 286-16 MHz

LANDMARK = 21
- 1 Meg Ram Expandable to 4 MB
- Socket 80287 & AMI BIOS
- 6X16 Bit, 2X8 Bit Slots
- Real Time Clock w/Battery Backup
- 1.2 MB Floppy Drive
- 2 FD/HD Controller
- 200W PS w/Case Holds 5 Drives
- 101 Enhanced Keyboard

$369 286-12 MHz

LANDMARK = 16
- 1 Meg Ram Expandable to 4 MB
- Socket 80287 & AMI BIOS
- 6X16 Bit, 2X8 Bit Slots
- Real Time Clock w/Battery Backup
- 1.2 MB Floppy Drive
- 2 FD/HD Controller
- 200W PS w/Case Holds 5 Drives
- 101 Enhanced Keyboard

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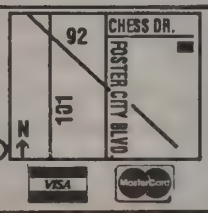

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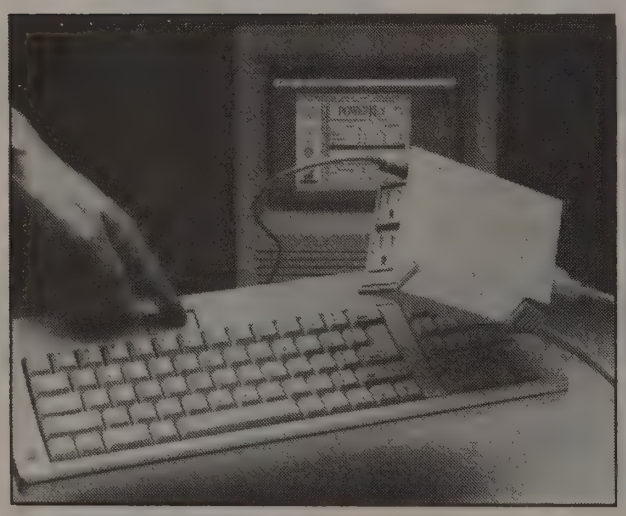
large image files. I ran a test by cataloging a CD-ROM disc that had some large TIFF files. Some were too large to display on my system. Search notified me that it could not create a thumbnail for those images, but it did add them to the catalog, and in the place of the thumbnail it displayed a message that the files were too large to display.

I've used other cataloging programs. Some require that you add each file manually. Others, based on database programs, are very slow during searches. Some create a catalog with a duplicate of each image file, requiring as much additional storage space as the original files. Search is the best image catalog and retrieval program I've used, and I would recommend it without reservation. Their customer support has been excellent, they continue to improve the program, they offer network users a ten-pack, and prospective users can obtain a demo version to explore. Multi-Ad is a quality company, with a quality product. (Multi-Ad Services, Inc.,1720 W. Delweiller Dr., Peoria, IL 61615. 309/692-1530)

POWERKEY

Published By: Sophisticated Circuits
List Price: $99
Reviewed By: Matthew Leeds

Convenience is a funny thing. There was a time when a hard disk was seen as a remarkable luxury. Now it is just about impossible to do productive work on a Mac without one. In fact, on my machine at home I've got two, one inside my Mac and an external unit that I used to have to remember to turn on before I turned my Mac on.



The Mac is easy to turn on, just hit the power key on the keyboard. To turn the drive on I had to reach around the back side of the drive for the power switch. I also had to remember to turn it off. Then I added a CD-ROM drive to my setup. That gave me two devices to turn on and off each time I used my Mac.

Then I got a PowerKey. It's a simple device. It plugs into the wall to get power, and plugs into the ADB connector on a Mac so that it knows when you turn your Mac on and off. When you do that, it turns the power for up to four devices on and off as well. It's that simple, and it works.

Although it can do much more, for me that was enough to want one. Now that I've got it, I've discovered that the software that comes with PowerKey truly does do a lot more. The PowerKey hardware has a clock built-in, and in conjunction with the included Control Panel software and macro program (QuickKeys Lite), my Mac can now turn itself on, execute a macro or set of macros, and then turn itself off. I can set it up to do a backup of my hard drive at night while I'm asleep, or to call up an online service, download or upload mail or other data while the telephone and access charges are lower, and then shut down. It's spooky to watch your Mac turn itself on, but it's very useful.

PowerKey also contains surge suppression and line noise protection hardware. The power switching occurs during the zero crossover of the AC cycle which saves some wear and tear on equipment and switches. PowerKey will work with a Mac SE or above, adding the ability to turn an SE, Classic, or LC on from the keyboard, and its ADB cable includes a passthrough so that it does not hog an ADB connector. The version of QuickKeys Lite that comes with PowerKey can be upgraded to QuickKeys v2.0 for a reasonable fee. With the optional WakeUp cable (and a modem) you can turn your Mac on via a telephone call.

PowerKey is a well-designed and extremely useful package. The hardware is solid and attractively styled, the software functional and flexible. If you are tired of reaching behind your stacked-up hardware each time you sit down to work, get a PowerKey. (Sophisticated Circuits, Inc., 19017 120th Ave. N.E., Suite 106, Bothell, WA 98011. 206/485-7979)

MACLABELPRO

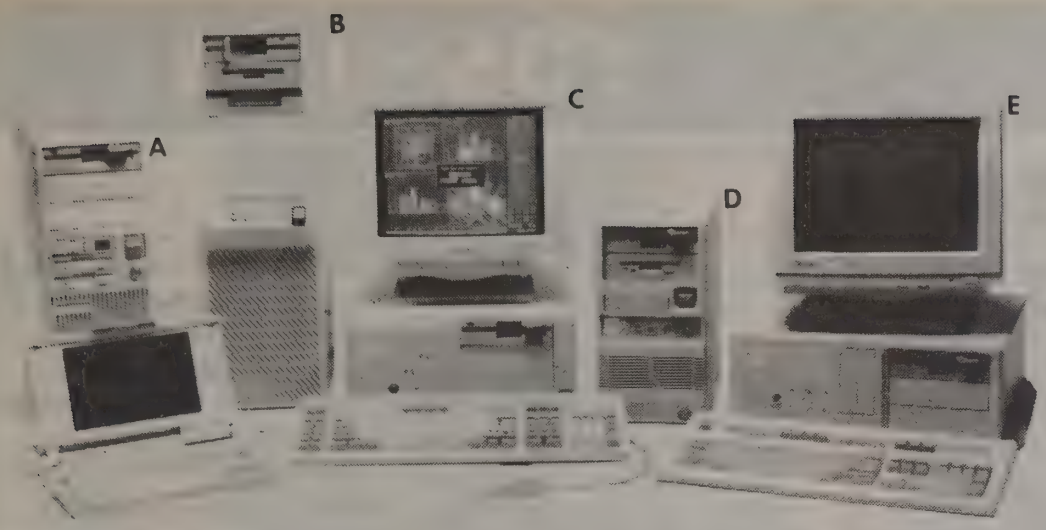
Manufactured by: Avery
List Price: $99.95
Reviewed By: Michael Henry

MacLabelPro is an easy to use and practical label maker that allows one to use the design capabilities of the Macintosh to create custom-made mailing and shipping labels, index cards, post cards, and name tags. It allows the user, for example, to import graphics from applications like MacPaint, as well as from postscript files, to produce exceptionally high quality graphic designs. It also allows you to customize your label designs (i.e. create a permanent template to suit your specific needs).

The user works with a template, scaled to the size of the label, and is free to create designs, rotate text (at 90° increments), and even create serial numbers for multiple label identification. With its print-merging capabilities, MacLabelPro easily converts existing data files into printed labels and/or cards. (I had good results using an Excel spreadsheet converted to a standard TEXT file.)

Printing, however, poses some problems. On the ImageWriter it is impossible to print a single label. The

Continued



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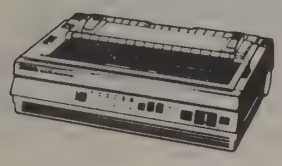

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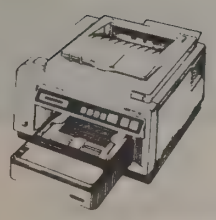

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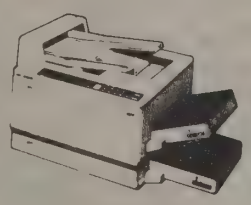

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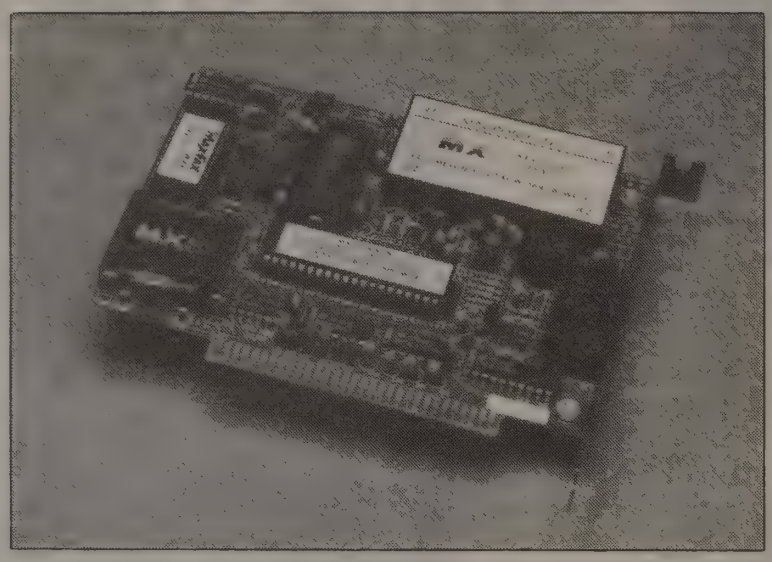

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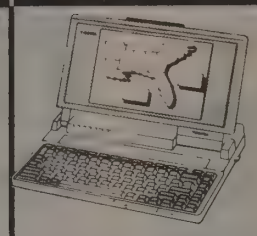

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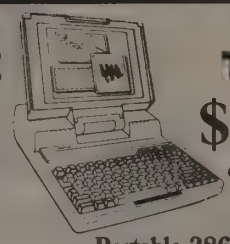

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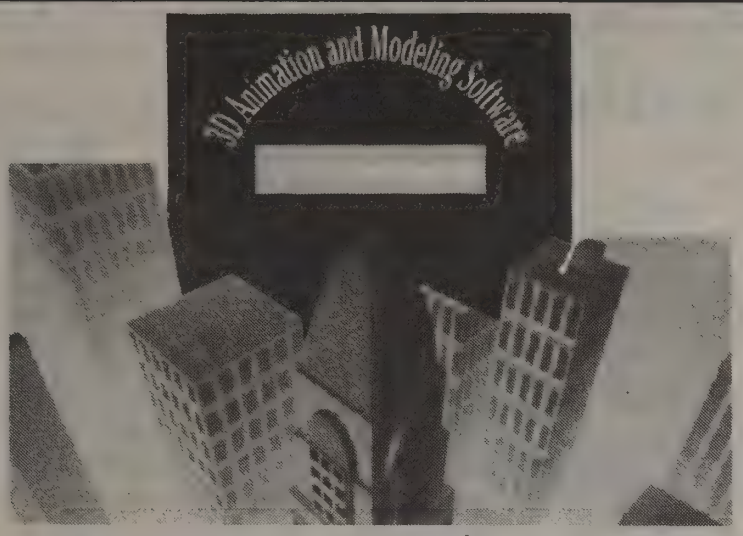

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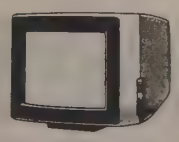

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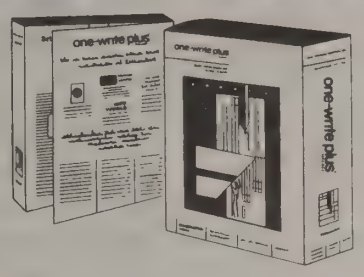

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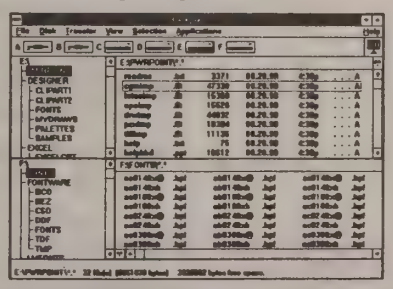

PC Magazine, March 12, 1991 - *File Shuttle Xpress* will charm *Windows* users ...with its slick GUI interface and fast operation in parallel mode.

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printer first feeds an entire sheet of labels then prints the desired label and feeds the next page. Avery's suggestion is to return the labels to the first page—always easier said than done. Apparently, this problem is not Avery's fault, but a product of the Mac's system software. Regardless of who's to blame, I was frustrated by this when trying to do small printing jobs.

Despite this flaw, MacLabelPro is excellent. If most of your label printing tasks are large ones, chances are you'll never have a problem using this program. It's simple and immensely effective at doing what it is intended to do. And for anyone with desktop publishing capabilities who is still dishing out large amounts of money to printshops for labels, here's your salvation. (Avery, Inc., Commercial Products Division, 818 Oak Park Rd., Covina, CA 91724. 818/792-2102)

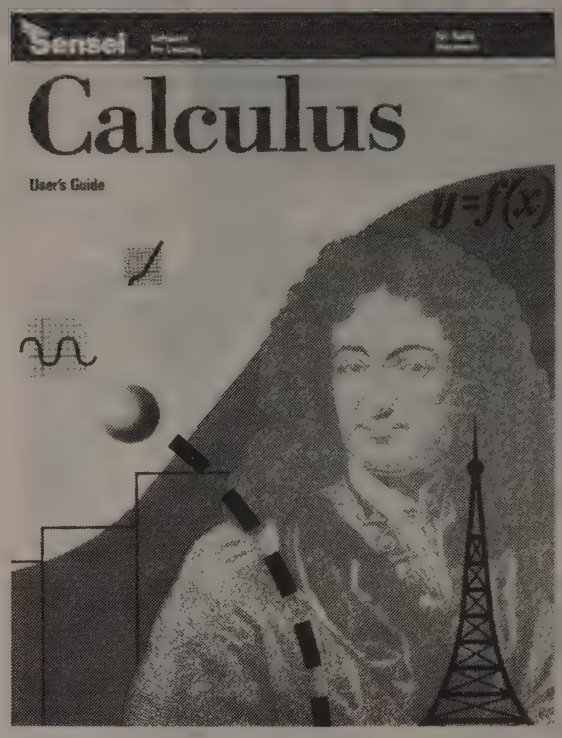
CALCULUS

Published By: Sensei,. Brøderbund Software for Education
List Price: $109.95 (School Edition)
Reviewed By: Michael Henry

I was initially a little unsure about reviewing a program that reminded me in any way of school, much less of mathematics. Three years of high school math had given me my fill of functions, equations, and trig for many lifetimes, I felt. So imagine my surprise when, after opening the box and starting up the disk, I found out that math could actually be interesting!

What I really like about this program is the way it's set up—essentially like a textbook, with an index, table of contents, and eleven chapters, each of which contains about 25-30 "pages" of material—tutorials, demonstrations (like an animated chalkboard!), and problems that test your knowledge of the material. The demonstrations and animated lessons are phenomenal. Like my high school algebra teacher, Calculus will show how you can simplify a problem by, say, combining and canceling like terms. But imagine an animated computer screen on which you actually can *see* the terms cancel or complement each other (for example, 2 and 2 literally fusing to form a 4 on the screen). Didn't you always wonder how you derived $2x^2 + 2$ from $\frac{2x^3 + 2x}{x}$? Well, now you can watch the process *as it goes on*, instead of relying on your professor's arcane explanation to explain how you jump from one line of an equation to the next and what happens between the two steps (Wait a minute...what happened to the $34 \times r^2$?). Thus it solves one of the most persistent problems I encountered in high school—the teacher's assumption that everybody knew exactly how he canceled out those darned x's. This element of interaction makes Calculus the ideal remedial program for those of us who are not too mathematically inclined. It is also excellent for reviewing or for independent study, since it allows you to work at your own pace and repeat problems until you're sure you understand them.

In the school version of the program, Brøderbund emphasizes its usefulness for the educator, offering advice in the teacher's manual about methods of instruc-



tion and inside tips on where to find the animation and demonstration pages. It even gives a pictorial preview of each of the different sections within each chapter, an immense time-saver for those of us who know what we're looking for.

What can't Calculus do? Well, it can't take the place of a living teacher—not completely. There is a certain aspect to education that computers are simply not yet intelligent enough to manifest. But educators and students alike should view Calculus with great optimism. It has the capabilities that enable it to be a most powerful educational tool. I wish this type of software had existed when *I* was in high school. (NOTE: Both student and teacher editions are available. Sensei, Brøderbund Software, Inc., 17 Paul Dr., San Rafael, CA 94903-2101. 415/492-3200)

MACINTOSH BOOK REVIEW

THE MAC IS NOT A TYPEWRITER: A STYLE MANUAL FOR CREATING PROFESSIONAL-LEVEL TYPE ON YOUR MACINTOSH

By: Robin Williams
Published By: PeachPit Press
List Price: $9.95
Reviewed By: Michael Robin

Somewhere, most of us learned a proper set of rules for typing presentable papers for school or work: e.g. always keep a double space between sentences, underline titles, and use a double hyphen to indicate a dash.

But that was in the age of the typewriter. Today we have desktop computers and desktop publishing. While computer technology and the rules guiding our use of that technology have changed, our use of those old typing rules have not.

The Mac Is Not a Typewriter is a great 72-page book offering "some of the secrets that have been used for centuries to make type pleasing, beautiful, readable, legible, and artistic—secrets we just weren't taught in Typing 1A." Robin Williams presents a set of guidelines for using the Macintosh when you are creating text and explains why you should use them.

She begins by explaining why the double space is ob-

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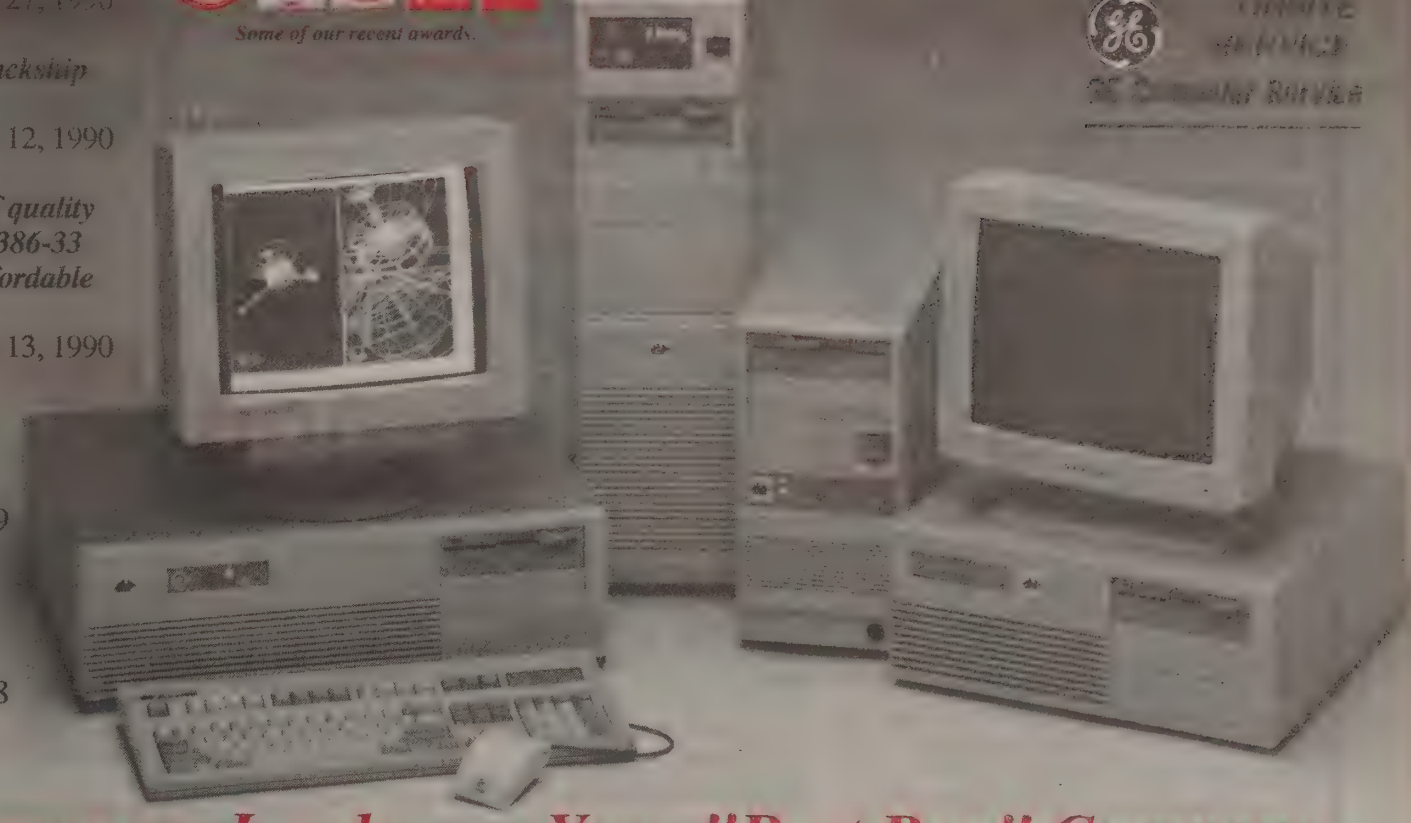

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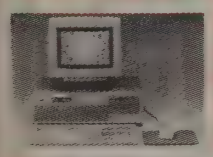

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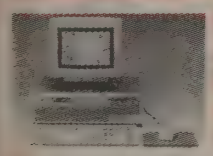

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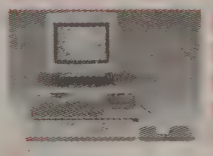

- 2 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 40 MB IDE Drive
- 16-Bit VGA with 256K
- 14" VGA Color Monitor
- 1 Parallel, 2 Serial Ports and 1 Game Port
- 101-Key Keyboard
- MS DOS 3.3 or 4.01

386SX/20 $1895
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BLK286 VGA Systems

- 1 MB RAM
- 1.2 MB 5.25" Drive
- 40 MB IDE Drive
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- 14" VGA Color Monitor
- 1 Parallel, 2 Serial Ports and 1 Game Port
- 101-Key Keyboard
- MS DOS 3.3 or 4.01

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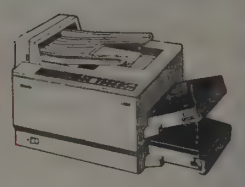

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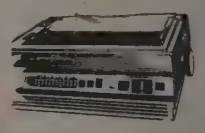

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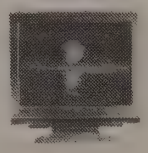

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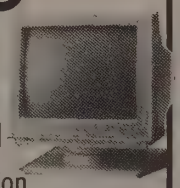

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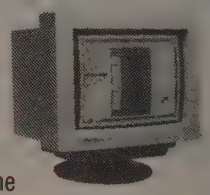

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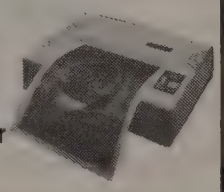

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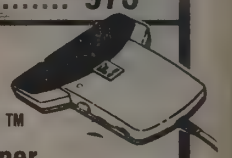

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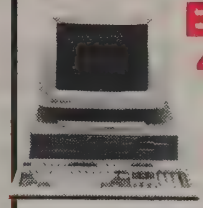

ECI 386-25 MHz
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$1065

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- Intel 80386 25MHz CPU & AMI Bios
- Math Co-processor Socket
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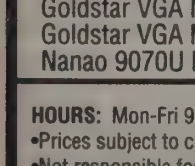

ECI 386SX
16 MHz System
40 MB Hard Disk
$849

- 1 MB RAM expandable to 8 MB
- 16 MHz Intel 80386SX CPU running at 0/1 Wait State
- 80387SX Math Co-processor Socket
- 6 x 16, 2 x 8 bit slots
- 1.2 MB or 1.44 MB Floppy Drive
- 40 MB 28 ms Hard Drive w/controller
- I/O 2 serial, 1 parallel, 1 game
- Real time clock w/battery backup
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- 101 keyboard
- An affordable system w/386 power

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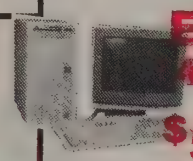
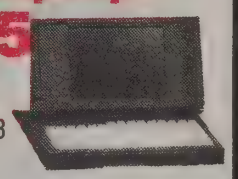


ECI 286-12/16 MHz
40 MB Hard Disk 28 ms
$569/ $619

- Baby size main board running at 6/12 or 8/12 0/1 Wait State
- 1 MB RAM expandable to 4 MB
- 12/16 MHz Intel 80286 CPU, AMI BIOS
- 80287 Math Co-processor Socket
- 5 x 16, 3 x 8 bit slots
- 1.2 MB or 1.44 MB Floppy Drive
- 40 MB 28 ms Hard Drive w/controller
- I/O 2 serial, 1 parallel
- Real time clock w/battery backup
- MINI Vertical Case w/200 W Power Supply
- 101 keyboard

Free 3 Button Mouse with Pad
One Year Warranty on Labor & Parts

386SX-16 Laptop
$2395



- Intel 80386SX-16 CPU
- 2 MB RAM expandable to 6 MB
- 40 MB Hard Drive
- VGA Display, .27 dp, with ext. connector
- 1 Parallel, 1 Serial Port
- 12 Function Keyboard with ext. connector

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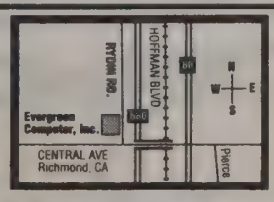

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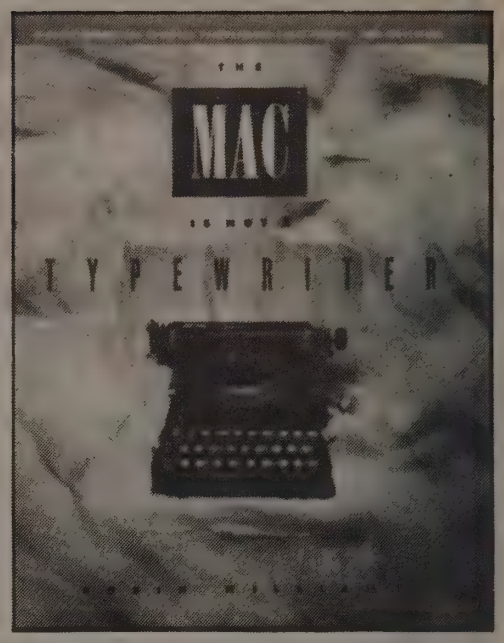

solete. Because typewriters gave the same amount of space to every character, we started placing a double space between sentences to help the reader see the end and beginning of sentences. On the Macintosh, on the other hand, each character takes up a proportional amount of space—the letter i takes up about one-fifth the space of the letter m. There's no longer the need to visually separate sentences as we did when using typewriters. Williams also discusses other style rules, such as when and how to use em and en dashes, accent marks, and underlining.

Computers also give us more control designing the layout of the text we write. This book also presents an introduction to typography. Design issues such as combining typefaces, leading, kerning, widows and orphans, and adjusting sans serif fonts for greater legibility are clearly discussed.

There's a quiz at the end of the book that all writers and aspiring copy editors should try. The book also includes a compendium of rules previously discussed, along with a list of often-used special characters and accent marks, with their key commands.

Although this book is sub-titled *A Style Manual for Creating Professional-Level Type on Your Macintosh*, the information is applicable to the work on any computer. Individual key commands and capabilities are Macintosh specific, but the ability to use italics for titles, to change fonts, or to use en and em dashes, are just as easy and important on a PC-compatible.

Once in a great while you come across something that would make life easier if everyone had one. As an editor and writer, I believe *The Mac Is Not a Typewriter* proves to be one of those things. (PeachPit Press, Inc., 1085 Keith Ave., Berkeley, CA 94708. 1-800-283-9444)

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- Windows! Making PCs More Productive
- Power Computing: Building a Power System
- LANs; Inter/Intra-Networking
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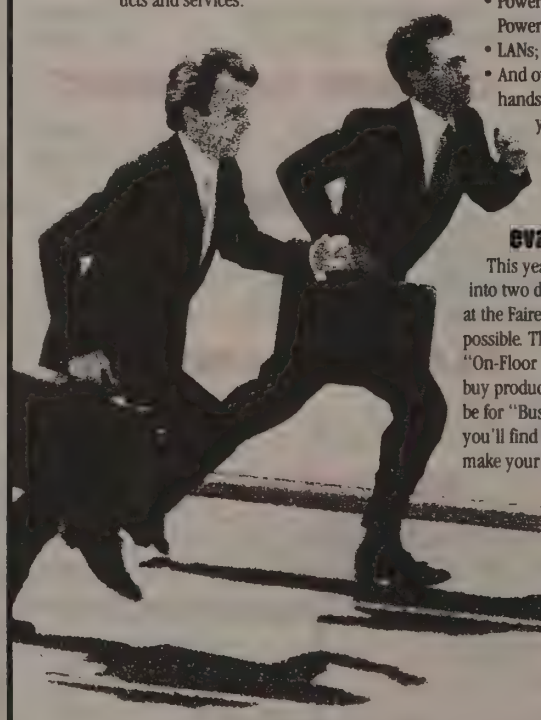

The WCCF is also a smart way to evaluate and buy.

This year we've divided the show floor into two distinct areas to make your time at the Faire as efficient and effective as possible. The left side of the hall will be "On-Floor Sellers Only" where you can buy products. The right side of the hall will be for "Business-to-Business Only" where you'll find all the information you need to make your buying decisions.

PC HARDWARE REVIEW

THE SOTA/EXPRESS 386

Manufactured By: SOTA Technology
List Price: 16MHz version $595; 20MHz version $795
Reviewed By: Lenny Bailes

386 machines account for less than 30% of the installed base of MS-DOS computers. But pressure is growing for owners of 8088 and 80286 machines to upgrade: more 386-specific software packages arrive at computer stores every day. Multitasking environments like Windows and DESQview need 386 hardware to reach their full operating potential.

The SOTA Express/386 card is an upgrade alternative to buying a complete new system

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- BABY AT CASE w/200W POWER SUPPLY

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G386SX-16 SYSTEM

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- 2HF/2HD DRIVE CONTROLLER
- 1.2 OR 1.44 MB FLOPPY DRIVE
- AT I/O CARD
- 101-KEY ENHANCED KEYBOARD
- BABY AT CASE w/200W POWER SUPPLY

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- 1 MB ON BOARD
- 2HF/2HD DRIVE CONTROLLER
- 1.2 OR 1.44 MB FLOPPY DRIVE
- AT I/O CARD
- 101-KEY ENHANCED KEYBOARD
- BABY AT CASE w/200W POWER SUPPLY

$869 w/64K CACHE
$759 w/o CACHE

G386-33 w/64K CACHE SYSTEM

- 1 MB ON BOARD
- 2HF/2HD DRIVE CONTROLLER
- 1.2 OR 1.44 MB FLOPPY DRIVE
- AT I/O CARD
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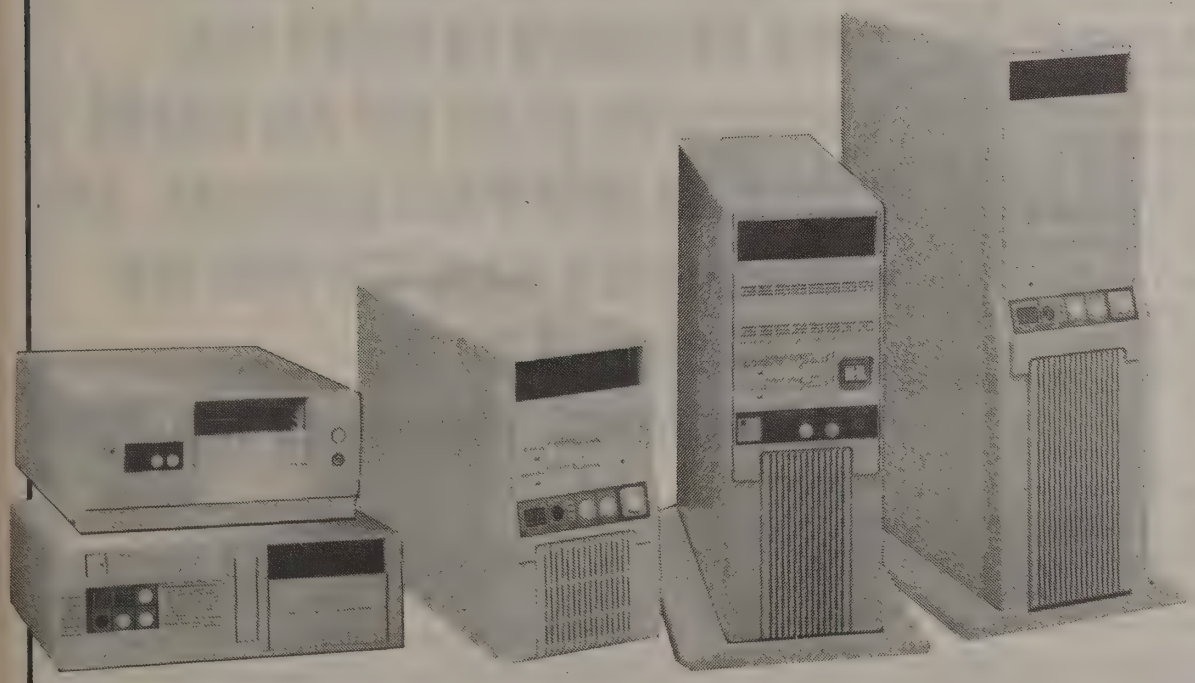

MOUSE

Cordless Smartmouse w/Software	$39
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FLOPPY DRIVE

1.2 MB	$69
1.44 MB	69

HARD DRIVE

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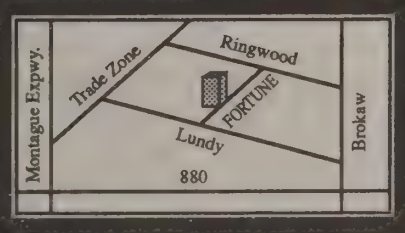

or replacing a motherboard. The SOTA module is a plug-in card designed to make the conversion of an old AT, 80286 clone, or IBM PS/2 painless. The wallet-sized card fits into the 80286 socket on the motherboard, replacing the 286 CPU.

The SOTA card is compatible with most 286 motherboards, including the original IBM AT, and IBM's newer PS/2 30 and 50 models. With the card plugged in, the computer uses your 286 BIOS, memory, and peripheral cards. The card's 386SX CPU supports the full 386 instruction set. Windows 3, QEMM, and other applications run as they would on a true 386.

The SOTA card is probably most attractive in the scenario of an office that needs to upgrade a quantity of 286 machines for network installation.

SOTA makes both 16MHz and 20MHz versions of this card. For an 8MHz AT, the 16MHz card doubles performance. (Norton's SYSINFO benchmark increases from 8.4 to 17.6). The 20MHz card will almost triple performance.

Faster 12MHz or 16MHz clones will show slightly more improvement than an IBM AT. With the SOTA-16 card installed, both types score a Norton SI rating of 18.8, Landmark rating of 22.4. The SOTA-20 boosts the Norton SI to 23.4, and the Landmark rating to 27.8.

SOTA is only one of several companies which market 386SX plug-in modules. With its internal static RAM cache, the SOTA card runs faster than competing products from Cumulus and 3Est, Inc. The SOTA card also has fewer compatibility problems than bus-expansion options like the Intel Inboard 386.

I tested the SOTA-16 card on a 12MHz 286 with 5MB of onboard RAM. My ordinary DOS applications ran with no problems. Program performance under DESQview improved as I would have expected. I was able to load Quarterdeck's QEMM and have DESQview "virtualize" graphics software into small windows.

I was able to run Windows in enhanced mode, opening DOS applications in small windows. Windows applications ran at acceptable speeds, but when the DOS applications ran concurrently, performance suffered (see below).

The SOTA card's static RAM cache is activated by a device driver in the config.sys. For most applications, the system functions like a 20MHz 386. The card avoids problems with 286 bus and clock speeds by adding wait states to the motherboard. (With the static cache disabled, the SOTA card runs at a clock speed of 6MHz with three wait states.) When Windows runs two or more DOS applications in small windows, the 16K cache gets overworked. The result is that performance slows down to an unworkable level. Performance is acceptable when two or three Windows applications run concurrently with one DOS window. Performance is also passable (for a 16MHz 386SX) when you run DOS programs full screen and limit them to foreground execution.

WHO SHOULD BUY THIS?

The cost of the SOTA/Express cards limits their desirability as upgrades for 286 clones. These days, you can buy a 386SX motherboard for around $300-$400. A full 32-bit, 25MHz 386 motherboard may cost as little as $650.

Swapping a motherboard requires more time and effort than pulling one chip from its socket—but most vendors who sell motherboards will install one for a small additional fee.

Swapping the motherboard for an IBM PS/2 system is more difficult and costly than upgrading a clone. The SOTA/Express offers a real advantage, here. You can easily install a SOTA card on a PS/2 machine. The PGA-style socket makes it a matter of five minutes to pull the 80286 and substitute the SOTA module. (286-clone motherboards often place the CPU in a difficult-to-pry-open socket. Pulling the chip from an LCC or PLCC socket is slightly tricky. If you're not careful, you can damage the socket and/or the CPU chip.)

The SOTA manual does include extensive, clearly written instructions for dealing with all CPU socket types.

The SOTA module is a plug-in card designed to make the conversion of an old AT, 80286 clone, or IBM PS/2 painless. The wallet-sized card fits into the 80286 socket on the motherboard, replacing the 286 CPU.

The SOTA card is probably most attractive in the scenario of an office that needs to upgrade a quantity of 286 machines for network installation. It's not necessary to buy new cases, or install new power supplies, disk drives, controller cards, etc. The SOTA card boosts performance, avoids hassles with expanded memory cards, and runs 386-specific software, all with one purchase. If you already have an 80287 math coprocessor installed, the SOTA card can use it, sparing you the $350 upgrade to an 80387 coprocessor.

Users of early versions of the SOTA/Express should be aware that the current version fixes reported problems with IBM PS/2 systems and certain 286 BIOS types. (SOTA Technology, Inc., 559 Weddell Drive, Sunnyvale, CA 94089. 408/745-1111) ■

COMPONENTS

MOTHERBOARDS:

286-12:.....$83
286-20:.....$125
386SX16:..w/ IO....Mylex...$399
386-25:....OPTI w/o CPU.....$169
386-25:..C&T w/o CPU.....$199
386-33C:....64K w/o CPU.....$329
486-25C:...US Made 128K.....$1225
486-33C:...US Made 128k.....$1495

CONTROLLERS:

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IDE HFC.....4FD/2HD.....$37
MFM 1:1.....4FD/2HD.....$59
SCSI.....DTC 16 bit.....$129
SCSI Adaptec 1542 (16)..$280
ESDI.....DTC 16 bit.....$129
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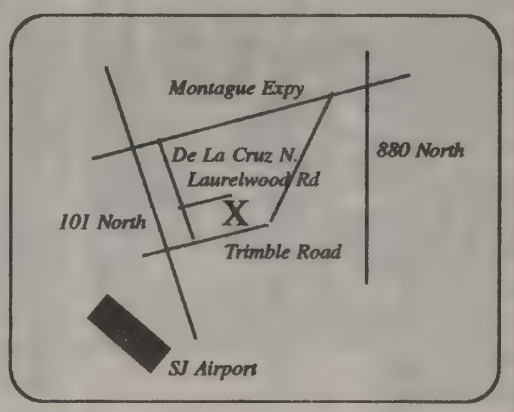

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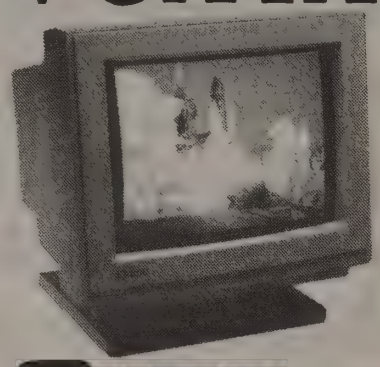

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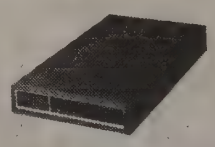

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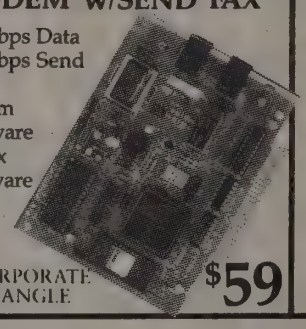

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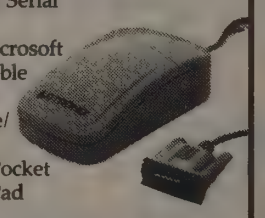

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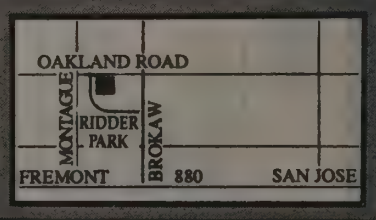

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Memory:	1 MB	1 MB	1 MB	1 MB	1 MB	1 MB
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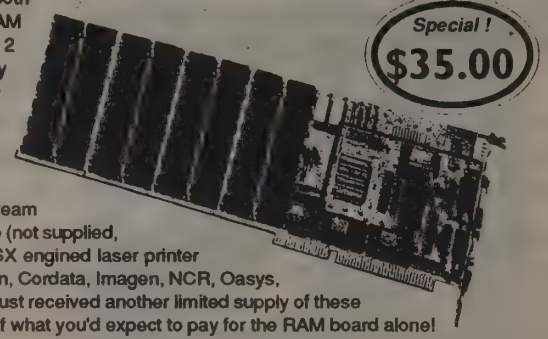

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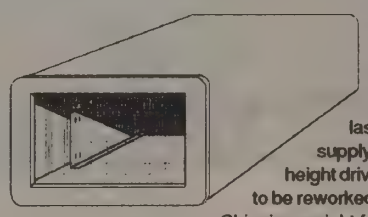
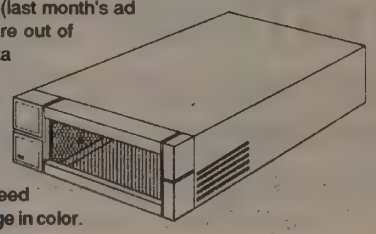
Does your Hard Drive need a home?

How about your CD-ROM Drive? Or your Tape Back-up? Floppy Drives? Eventually, if you keep adding drives to a system, you run out of places to put the drives! External drive enclosures are the only way to go, but they have not been attractively priced until now. HSC just acquired a large shipment of two different types of external drive enclosures that will allow you to house extra computer drives without mortgaging your house! Type "A" enclosures at left are used units, measure 8" x 5 1/2" x 15", feature a 40-Watt switching power supply with two drive connectors, and room for one full-height or two half-height 5 1/4" drives. They are finished in a beige-and-grey color scheme similar to the original IBM XT or AT (and thus about 99% of all clones!), but as they are used, there may be minor blemishes. They have space for a 3" cooling fan (last month's ad featured the same box with cooling fan installed for $49.00, but we are out of those). You will need to provide your own fan, if required, and a data interconnect cable, but a standard IEC power cord is included. You have seen these types of enclosures advertised elsewhere at close to $100.00, but we're offering these at less than half that! Hurry, they won't last long! Type "B" on the right is a brand-new empty case (no power supply or fan) that measures 7 1/2" x 2 3/4" x 14". These will accept one half-height drive and leave room for a small power supply, although the rear panel may need to be reworked for your application. (See small power supply below.) They are light beige in color. Shipping weight for "A" is approximately 8 lb., and 4 lb. for "B".



Type "A"
$45.00



Type "B"
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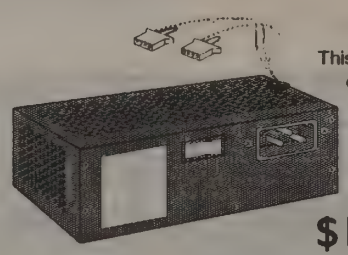
Small Disk-Drive Power Supply, Ready to Go...

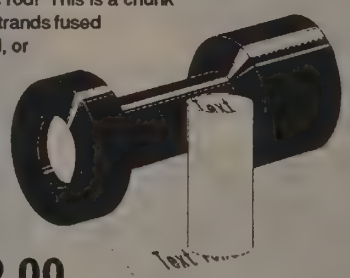


This little switching power supply is the perfect drop-in solution for those extra disk drive power requirements. It is already cabled with a pair of 8 inch leads with standard AMP 4-pin disk drive power connectors, and is ready to connect to AC with a built-in industry standard IEC receptacle and switch on the back (IEC Power cord is not included). The over-all size of its black anodized aluminum chassis is 1 7/8" x 3 1/8" x 5 3/4", and it is rated at 5 VDC @ 2 A, 12 VDC @ 3.5 A. This is plenty for a pair of floppies, or one half-height hard-disk drive. (Note: While this power supply is small enough to fit in the half-height case "B" above, it was not designed for it, so you will need to do some sheet-metal trimming to make the connector and switch accessible.) The best part is the price...$19.95! Shipping weight approx. one pound.

$19.95

...And now for Something Completely Different!

Here is a good reason to keep checking in with HSC to see what's new...an image-transmitting collimated Fiber-optic rod! This is a chunk of glass 1.1" dia. x 4.1" long that has some amazing optical properties. It is made up of millions of tiny (5 micron) glass strands fused together into one solid piece of glass, polished to an optical flat on either end. When an image is focused on one end, or when the rod is set directly onto a piece if paper with an image, it transmits the image to the other end with astounding resolution. It's as if the image just jumped to the other end of the rod! This optical marvel is from some piece of government contract gear (probably involving an infra-red image converter tube) that must have cost a fortune, but our price is sure to intrigue you. Each rod is held in a beautifully machined aluminum housing (2 3/4" dia. x 6 5/8" long) by means of RTV Silicone at one end, but the rod may be pushed out after carefully cutting the adhesive with a sharp blade. The more enterprising among you will then fill the housing with lead and have a beautiful executive dumbbell for your efforts! The rod is the real attraction, though, and words don't do it justice. It will make a great executive desk-top plaything, providing hours of introspective focus. Each one comes with a Q.A. Specification Sheet, describing end-flatness, distortion, etc. If you find a clever use for one, let us know! Shipping weight approx. 2 lb.



$39.00

* * * * * * * * * *

Flash! Just in! Too new for pictures! HSC has just received a significant quantity of space-grade (satellite quality) solar cells! These are raw cells, approximately 2 1/2" square, with solder pads on the back (use a low-wattage iron to connect). Output is approximately .46 Volts at roughly half an Amp. We will try to get better specs on them soon, but we wanted to let you know we had these extremely popular items. The price is $15.00 for ten cells.

* * * * * * * * * *

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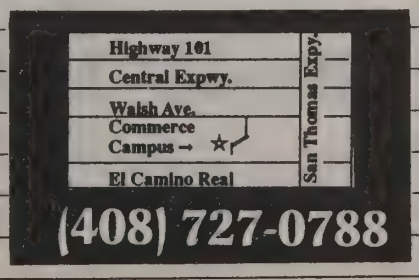

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Continued from page 20

nologies. The main purpose behind both of these companies is to reassure companies that compete with Sun in the SPARC-based workstation market that they will have access to new developments as they arise. The companies will still favor their parent Sun, of course, but will be able to sell into the quickly growing market for workstation software and help create a larger base of compatible software.

•Software Publishing, Inc. has sold the marketing rights to its PFS: series of software to up-and-coming publisher Spinnaker. The PFS: series was what gave Software Publishing its name in the early 1980s, and was the first line to emphasize ease of use and eschew featurism in mainline applications like word processors and data base management systems. Spinnaker will market the PFS: line and expand it into low-end Windows software in the coming year. Software Publishing will continue with its move into higher-end software like its InfoAlliance data merging software. ■

HIGH TECH NEWS FROM JAPAN

(Excerpted from the weekly news digest of Japan Marketing Group, 400 Groveland Ave., Suite 312, Minneapolis, MN 55403, (612)871-7889. JMG covers products and events in the Japanese computer industry.)

•Seiko-Epson is going to withdraw from the Japanese word processor market, in which it has a large share. The company feels that the word processor market is going to be subsumed by the PC market, and wants to be in that larger market when it does. Last year, Seiko-Epson introduced a PC bundled with a word processing program and built-in printer that has been very successful.

•Sony and Nintendo will jointly develop a sophisticated game machine that draws almost equally from both companies. Sony will include a Nintendo Super Family Computer in its system that also includes a Sony CD-ROM player. The CD-ROM format will be proprietary and companies who want to sell into the market will have to license the technology from Nintendo.

•Toshiba has started producing a 2.5" hard drive that holds 43MB. This year, Toshiba will produce around 60,000 units a month. The drives will be primarily used in notebook computers.

•Sony's 8cm CD-ROM standard has been adopted by many major manufacturers, including Fujitsu, Matsushita, Sanyo, Canon, Ricoh, Casio, Chinon, and Sega. Sony will manufacture the components and drives.

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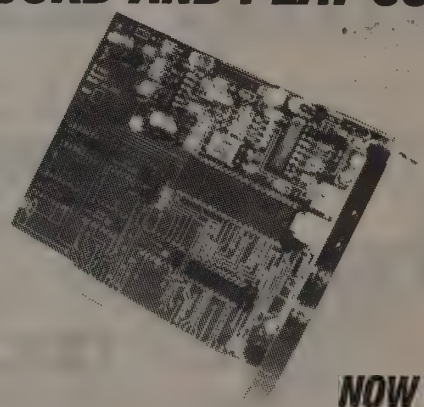

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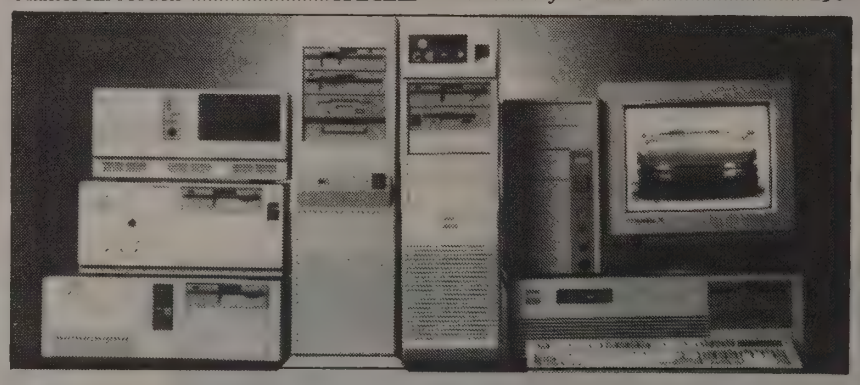

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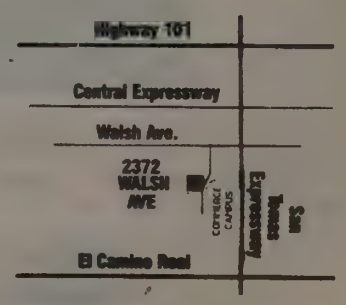

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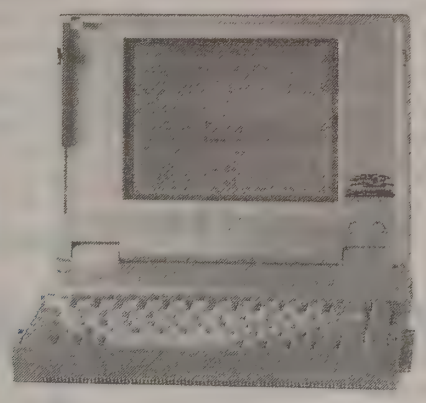

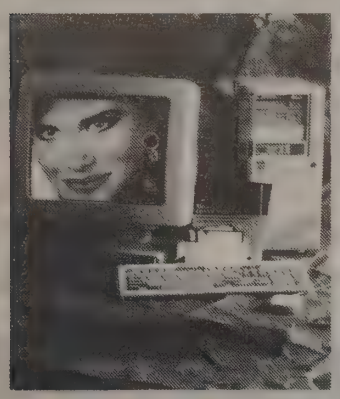

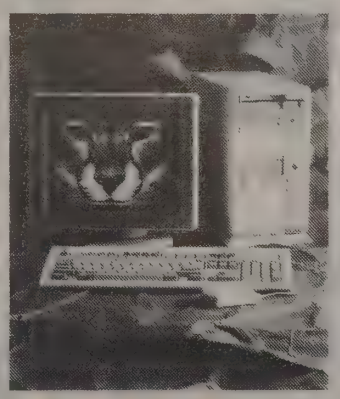

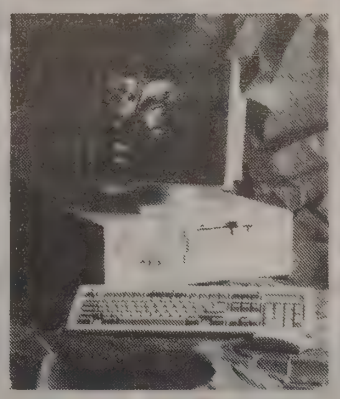

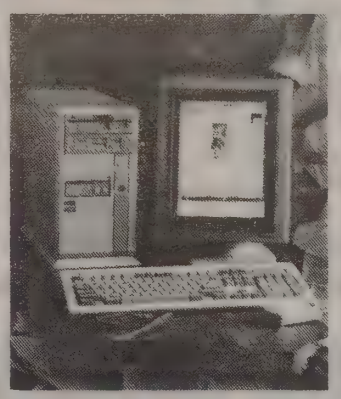

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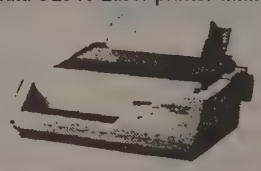

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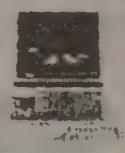

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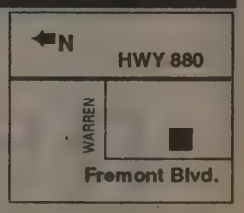

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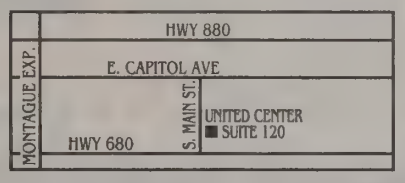

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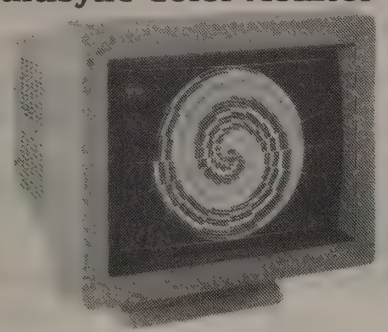

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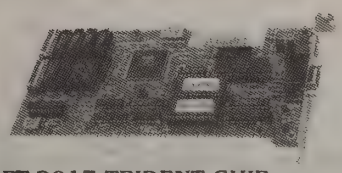

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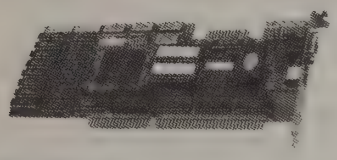

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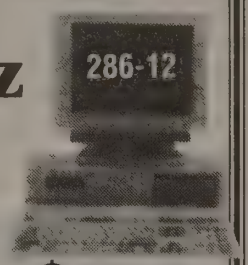

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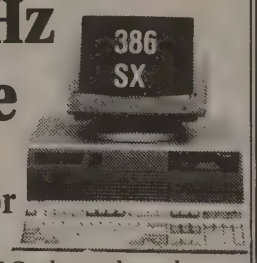

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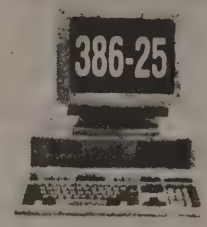

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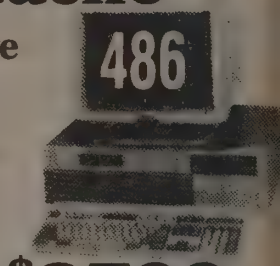

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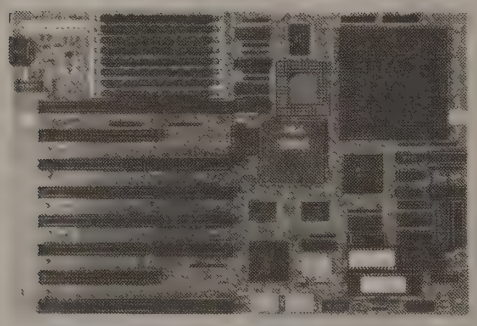

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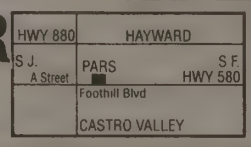

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2 SERIAL / 1 PARALLEL
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101-KEY KEYBOARD

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386-25C MHz

64K CACHE

1MB RAM
1.2MB FLOPPY DRIVE
1:1 IDE FD/HD CONTROLLER
2 SERIAL / 1 PARALLEL
AT CASE W/ POWER SUPPLY
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W/O CACHE **$819**

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1MB RAM
1.2MB FLOPPY DRIVE
1:1 IDE FD/HD CONTROLLER
2 SERIAL / 1 PARALLEL
AT CASE W/ POWER SUPPLY
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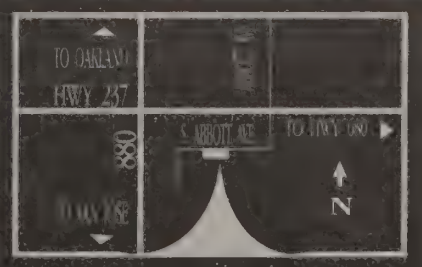

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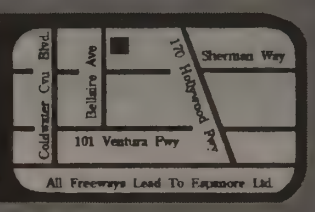

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* W/Tyvek & Labels	Colors: Lt. Blue, Royal Blue, Brown, Green, Grey, Red, Lavender, Magenta, Burgundy, Orange, Yellow, White & Rainbow Pak (10 colors)	54¢
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W/Paper & Labels	Colors: Royal Blue, Green, Grey, Red, Yellow	75¢/500+

Avery Labels

Size	Qty.	Notes	P/N	Price
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3½" x 15/16"	5000		4013	15.31
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3¾" x 1¼"	250	5.25" Disk	4240	11.40
1" x 2⅝"	3000	Laser	5160	24.85
3½" Disk Labels	630	Laser Labels	5196	32.60
5¼" Disk Labels	840	Laser Labels	5197	32.60
List&Mail Plus (IBM PC/XT/AT & PS/2 Software)			4210	46.12
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- 80386SX-16 Intel microprocessor
- AMI 386 ver.BIOS
- 2MB SIMM expandable to 6MB
- One 3.5" FDD & one 40MB HDD
- 1 Serial and 1 parallel port
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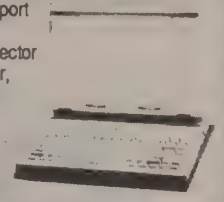
- Internal modem slot
- Ext. video (VGA) connector
- 3-Way: AC/car adaptor, battery pack (optional)
- 85/86 keys, multi-language ALPS tactile keyboard



MICRO-L 486-25/33 EISA Cache $2,645

- Intel 80486-25MHz CPU, Lndmk: 111.80 MHz
- CMOS Set-up, MIPS: 10.979
- CPU Built-in 1st level 8KB Cache memory with 2nd level 256KB Cache memory
- 4MB RAM expandable to 64MB on-board
- Supports external Weitek 4167
- Eight expansion slots (Six 32-bit, two 16-Bit ISA)
- AMI/Award 486 BIOS supports shadow RAM
- 1.2MB and 1.44MB Foppy drives (TEAC)
- 2 serial, 1 parallel ports
- 1:1 interleave ESDI controller with 32k Cache or IDE
- Keytronics (USA) or Mytek (click-type) 101 keyboard
- Tower case w/230W Power Supply/7 bay drive/digital display w/230W power supply
- **33MHz (Lndmk : 146.50, MIPS: 14.489) add $650**

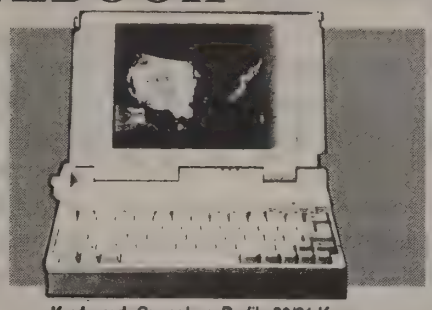
STANDARD SYSTEM W/MONITOR & VIDEO CARD

Monitor & Video Card	No Video & Monitor	14" VGA 1024 x 768 0.28 dp	HiRes VGA 1024 x 768 Seiko CM-1440	14" Multiscan 1024 x 768 Sony 1304**
Basic System	2,645	3,085	3,275	3,525
WITH HARD DRIVE				
80MB - IDE	3,035	3,475	3,665	3,965
100MB - IDE	3,070	3,510	3,970	4,100
200MB, 15ms - IDE	3,658	3,810	4,015	4,425
*338MB, 16ms - ESDI	4,020	4,460	4,645	4,940

*Maxtor Drive ** ORCHID ProDesigner II - 1MB

New! PC NOTEBOOK

Architecture	IIBM PC/AT compatible (AMI BIOS)
CPU	80386SX 16MHz Runs at 8/16MHz software selectable
Co-Processor	80387SX (End-user installed option)
Core Logic	Toshiba
DRAM Memory	Basic 2.0MB, expandable to 4.0MB EMS support (LIM 4.0)
I/O Interface	RS-232C x 1 (Async, 9-pin) External 5.25" FDD/Printer port VGA Output (15-pin) PS/2 compatible port External 101/102 keyboard adaptor for mouse port External expansion box port
I/O Slot	Expansion memory slot x 2MB (End-user selectable option)
Disk Drive	3.5" FDD x 1 (1.44MB) 2.5" HDD x 1 (20 or 40MB)
Power Supply	Cartridge type Ni-Cad battery with external AC Adaptor/Recharger
Screen	VGA compatible screen (640 x 480 dots) Black & White LCD with Backlit (CCFT) 16/32 Gray Scales



Keyboard	Super Low-Profile 80/81 Keys (101/102 keys emulation)
Modem Slot	Internal modem/FAX slot (End-user installation option)
Dimensions	11.0" x 8.5" x 1.98" (W x D x H)
Weight	6.3 Lbs.Includes HDD, FDD & Battery

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Keyboard: ALPS — Motherboard: TOSHIBA
Inverter: EPSON

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80386SX 20MHz - Call!

MICRO-L 486-25 AT Cache $2,125

- Intel 80486-25MHz CPU, Lndmk: 114.10 MHz
- CMOS Set-up, MIPS: 11.104
- CPU Built-in 1st level 8KB Cache memory with 2nd level 256KB Cache memory
- 4MB RAM expandable to 16MB on-board
- Supports external Weitek 4167
- Eight 16-bit slots
- AMI/Award 486 BIOS supports Shadow RAM
- 1.2MB and 1.44MB Floppy drives (TEAC)
- 2 serial, 1 parallel ports
- 1:1 interleave ESDI controller with 32k Cache or IDE
- Keytronics (USA) or Mytek (click-type)101 keyboard
- Tower case w//7 bay drive/digital display/230W P/S
- **33MHz (Lndmk: 149.60, MIPS: 14.597) add $340**

STANDARD SYSTEM W/MONITOR & VIDEO CARD

Monitor & Video Card	No Video & Monitor	14" VGA 1024 x768 0.28 dp	HiRes VGA 1024 x 768 Seiko CM-1440	14" Multiscan 1024 x 768** Sony 1304
Basic System	2,125	2,565	2,755	3,010
WITH HARD DRIVE				
80MB - IDE	2,515	2,955	3,045	3,395
100MB - IDE	2,550	2,990	3,180	3,440
200MB, 15ms - IDE	2,865	3,305	3,495	3,745
*338MB, 16ms - ESDI	3,500	3,940	4,130	4,415

*Maxtor Drive ** ORCHID ProDesigner II - 1MB

MICRO-L 386-33 Cache $1,450

- Intel 80386-33MHz CPU, Lndmk: 58.7MHz/, MIPS: 7.99
- 4MB RAM exp. to 16MB on-board • SIS™ Chipset
- 80387 Weitek WTL 3167 co-processor socket
- AMI BIOS • 64k Cache expandable to 128k Cache
- True OS/2, XENIX, MS DOS, & Novell compatible
- 8 expansion slots (1-32, 8-16 bit)
- 1:1 interleave ESDI controller with 32k Cache or IDE
- 1.2 MB and 1.44MB FDs (Teac)
- 2 serial, 1 parallel ports
- Keytronics (USA) or Mytek (click-type) 101 keyboard
- Tower case w/7 bays/digital display w/230W P/S
- MS DOS 3.3 or 4.01 included

STANDARD SYSTEM W/MONITOR & VIDEO CARD

Monitor & Video Card	14" VGA 1024 x 768 Monitor	14" VGA 1024 x 768 0.28 dp	HiRes VGA 1024 x 768 Seiko CM-1440	HiRes VGA** 1024 x 768 Sony 1304
Basic System -	1,450	1,890	2,060	2,330
WITH HARD DRIVE				
80MB - IDE	1,840	2,280	2,450	2,720
100MB - IDE	1,875	2,315	2,485	2,755
200MB, 15ms - IDE	2,190	2,615	2,800	3,070
*338MB, 16ms - ESDI	2,860	3,300	3,470	3,740

*Maxtor Drive ** ORCHID ProDesigner II - 1MB

MICRO-L 386-25 $1,175

- 80386-25MHz CPU, Lndmk: 30.0MHz
- True OS/2, XENIX, MS DOS, & Novell compatible
- 4MB RAM expandable to 8MB
- 80387 co-processor socket
- 1.2 MB & 1.44MB FDs (Teac)
- 1:1 interleave controller or IDE
- AMI BIOS, NEAT™ Chipset
- 8 expansion slots/2 serial, 1 parallel ports
- Keytronics 101keyboard (USA) or Mytek (click-type)
- 6-drive Baby AT case with security lock, LED indicators
- 200W power supply/Tower Case add $85
- MS DOS 3.3 or 4.01 included

STANDARD SYSTEM W/MONITOR & VIDEO CARD

Monitor & Video Card	12" Mono 720 x 350	14" VGA 640 x 480 Relisys	14" Multiscan 1024 x 768 0.28 dp	HiRes VGA 1024 x 768 Seiko CM-1440
Basic System -	1,270	1,545	1,615	1,805
WITH HARD DRIVE				
40MB - IDE	1,475	1,750	1,820	2,010
80MB - IDE	1,660	1,935	2,005	2,195
100MB - IDE	1,695	1,970	2,040	2,230
200MB, 15ms - IDE	2,010	2,285	2,355	2,545

MICRO-L 386-SX $825

- 80386/SX-16 CPU runs 16MHz
- 80387 co-processor socket
- 2MB RAM expandable to 8MB
- 1.2 MB & 1.44 MB floppy drive (Teac)
- True OS/2, XENIX, MS DOS, and Novell compatible
- AMI BIOS, NEAT™ Chipset
- 1:1 interleave HD/FD IDE controller
- 8 expansion slots/2 serial, 1 parallel ports
- Keytronics (USA) or Mytek (click-type)101 keyboard
- 6-drive Deluxe baby-AT case with 200W Power Supply
- MS DOS 3.3 or 4.01 included
- **386/SX-20MHz add $90**

STANDARD SYSTEM W/MONITOR & VIDEO CARD

Monitor & Video Card	12" Mono 720 x 350	14" VGA 640 x 480 Relisys	14" VGA 1024 x 768 0.28 dp	HiRes VGA 1024 x 768 Seiko CM-1440
Basic System -	925	1,195	1,265	1,455
WITH HARD DRIVE				
40MB - IDE	1,130	1,400	1,470	1,660
80MB - IDE	1,315	1,585	1,655	1,845
100MB - IDE	1,350	1,620	1,690	1,880
200MB, 15ms - IDE	1,665	1,935	2,005	2,195

MICRO-L 286-12 $385

- 80286-12.5MHz CPU
- True OS/2, XENIX, MS DOS, and Novell compatible
- 80287 co-processor socket
- 1MB RAM expandable to 4MB
- 1.2 MB floppy drive (Teac)
- 2 HD/2 FD IDE controller
- 2 serial, 1 parallel ports
- 101 Enhanced keyboard
- 6-drive Deluxe baby-AT case with 200W power supply
- **16MHz add $45**

STANDARD SYSTEM W/MONITOR & VIDEO CARD

Monitor & Video Card	12" Flat Mono 720 x 350	14" VGA 640 x 480 Relysis	14" VGA 1024 x 768 0.28 dp	HiRes VGA 1024 x 768 Seiko CM-1440
Basic System -	480	740	825	1,015
WITH HARD DRIVE				
40MB - IDE	680	950	1,030	1,220
80MB - IDE	870	1,130	1,215	1,405
100MB - IDE	905	1,165	1,250	1,440
200MB , 15ms - IDE	1,220	1,480	1,565	1,755

MOTHERBOARDS

- 486-33 EISA w/64K Cache/up to 64MB ... $2,600
- 486-25 EISA w/64K Cache/up to 64MB ... $1,940
- 486-33 AT w/64K Cache/up to 16MB $1,720
- 486-25 AT w/64K Cache/up to 16MB $1,420
- 386-33 EISA w/64K Cache/up to 16MB ... $1,380
- 386-33 w/64K CACHE w/CPU $725
- 386-25 w/CPU - ECS $625
- 386-SX/20 NEAT $440
- 386-SX/20 VIA $430
- 386-SX/16 NEAT $360
- 386-SX/16 VIA $360
- 286-16 Soyo/Aox $149
- 286-12 VLSI $119

HARD DRIVES

- Maxtor XT-8070A 81MB IDE $385
- Maxtor LXT-200A 200MB IDE $740
- Maxtor XT-4170E/S 158MB $785
- Maxtor XT-4380E/S 338MB $1195
- Maxtor XT-8380E/S 360MB $1230
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- Maxtor XT-8702S 768MB $1570
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- Maxtor XT-8760S 768MB $1740
- Conner CP-3044 40MB $235
- Conner CP-3104 100MB $425
- Conner CP-3204 200MB $740
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- Quantum ProDr80A 84MB 18ms 3.5" $390
- Quantum ProDr105AT 105MB 17ms 3.5" $425
- Quantum ProDr120A 120MB 15ms $560
- Quantum ProDr170A/S 168MB 15ms ... $670
- Quantum ProDr210A/S 210MB 15ms ... $740
- WD IDE 40MB $205

PRINTERS

- Panasonic KXP-1180 9-pin $149
- Panasonic KXP-1124 24-pin $269
- Panasonic KXP-1624 24-pin $362
- Citizen GSX-140 24-pin $279

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- JetRam II, IID-1MB,2MB,4MB ... $95/130/210
- JetRam IIP, III-1MB,2MB,4MB.... $95/130/210

MONITORS

- Relisys VGA RE-8513 640 x 480 ..... $295
- Relisys VGA RE-8514 1024 X 768 0.28dp.... $325
- Relisys Super Multiscan RE-1520 ..... $580
- Relisys VGA Gry-Scl RE-9503 ..... $125
- Seiko VGA 1024X768 CM-1440 ..... $490
- Seiko VGA 1024x768 CM-1450 ..... $595
- Sony VGA 1024x768 1304 ..... $640
- NEC 3-D Multi-Sync 1024 X 768 ..... $625
- Nanao 16" VGA 1024x768 9070-U $1030
- Nanao 16" VGA 1024x768 9080-I $1280
- Sigma Design LaserView 16" $1650
- Genoa VGA Card 6300 (256K) $110
- Genoa VGA Card 6400 (512K) $130
- Genoa VGA Card 6400-A (512K) $215
- SpeedStar VGA 1MB $220

MISCELLANEOUS

- TEAC 1.2/1.44 MB FD $65
- Logitech C-9 Serial/Bus mouse $65/77
- FAX modem 2400/send $75
- FAX modem 9600/send-Recv & software ... $175
- U.S Robotics modem 9600SD Internal... $585/605
- Colorado DJ-10 Jumbo Tape Back-up 120MB ... $245
- Colorado DJ-20 Jumbo Tape Back-up 250MB.... $330
- MS DOS 3.3/4.01 ..... $65
- Keytronics 101 keyboard $45

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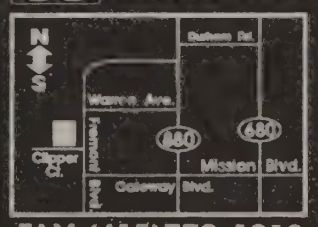

FAX:(415)770-1912

Continued from page 42

longer carry around blank forms and folders of past records.

Territory managers like Steve Poppy "try to get the proper space for the products and sell in additional products that a store doesn't carry." Using the GRiDPAD allows reports to be generated twenty-four hours after a territory is surveyed. Managers can easily get accurate, current information about the market coverage for particular territories and products.

Being able to generate reports quickly is only one advantage. "Another is email," says Poppy. "Messages and memos can be sent between people each night. The immediacy of communications is probably the biggest advantage to it." You can also write notes to yourself about each account that can be easily updated or deleted.

SURVEY RESEARCH

"A lot of our clients want the results immediately. With the GRiDPAD, all you have to do is download into the PC and just run your tabs, instead of having to begin either flying people to a site for data entry of the surveys as they come in, or bringing all the surveys back here. This is much less expensive, it's faster, we are able to process tabulations right on site. These executives get on a plane and fly back to the office. On the plane they are looking at the results of the study."

—Tim Steele, RDA Account Administrator

Applications such as CATI, or computer-assisted telephone interviewing, have been developed to allow telephone surveys to design more complex and subtle questionnaires. Cascading, a technique in which questions are based on the response to other questions, can now be used effectively. However, market research performed in person is still most often done with pencil and paper. Whether the forms are completed by a professional interviewer or an interviewee, computers with a keyboard are rarely practical in the field.

For more than a year, Research Data Analysis, a Bloomfield Hills, MI-based market research company, has been using the GRiDPAD at trade shows, mall intercepts, clinics, and focus groups. Following their initial success using the GRiDPAD, they have established Advanced Data Research (ADA) to develop applications for the GRiDPAD, and have begun to market the GRiDPAD to their competitors. According to Tim Steele, RDA Account Administrator, RRDA rents out the GRiDPAD to other companies doing a trade show, or a mall intercept study: "They don't want to spend the $3,000 to buy one, so they will rent from us. They can use their own software, or we can program the survey for them."

One of the first places RDA used the GRiDPAD was in the auto industry. Auto prototype evaluations can last several hours, with an audience completing a questionnaire rating every item on the car and comparing it to the competition.

Computer phobia was an important concern when RDA began using the GRiDPAD. "Everyone is familiar with a pen and paper," says Steele. "But with the GRiDPAD, we found that people enjoyed going through the study much more. Some studies have an interviewer; in some of our studies we just hand them a GRiDPAD and let them go. The person is able to go forward, backward, to change their answers. All the directions are right on the screen.

"I gave it to a lady in a trade show in Chicago who never really used a computer in her life. She knew how to type, but with the GRiDPAD there is no typing involved. She did not know anything about hardware or software. After a ten-minute introduction, she used it for two days without any problems."

Going beyond mere ease of use, the GRiDPAD checks for consistency, making sure all the questions are answered completely and correctly. If you answer the first choice for one auto, you can't answer the second choice for the same vehicle. You have to pick a different one.

"Nobody seems to have a problem using the GRiDPAD to answer the kind of close-ended questions that we have on the survey," says Steele. "We also have open-ended questions. But they are often like prices; we have them tap in the numbers on a keypad that pops up on the screen. They don't have any problems with that."

RDA has only made limited use of the handwriting character recognition features. "We are now doing surveys where people are writing verbatim answers to open-ended questions: 'What do you like most about this vehicle?' It's just like writing on an Etch-A-Sketch. We save a picture of what they have written and store that in a file." The comments are provided to their clients to complement the results included in the reports.

ADA, RDA's sister company, has collected statistics on people's response to using the GRiDPAD. Questioning people familiar with both formats of surveys, ADA discovered that 90% prefer using the GRiDPAD to pencil and paper. David Pietrowski of ADA did point out, however, that "it was a California sample. That might have had something to do with it; people are a little more leading edge there."

Although the general public clearly enjoys using the GRiDPAD to answer surveys, acceptance among professional interviewers is only around 50%. "We experienced these exact same things a decade ago when we were converting from the keypunch machine to computers for data entry," says Pietrowski. "The data entry operators were convinced that the keypunch machines had inherent superiority built in. They said they had rhythm with the key strokes, hearing the punches, things like that; they worked faster on a keypunch machine. A year after we had the computers in there, if you tried to give a key punch machine to any one of the operators, they would sock you in the mouth."

Market researcher Tim Steele: "I gave the GRiDPAD to a lady in a trade show in Chicago who never really used a computer in her life. After a ten-minute introduction, she used it for two days without any problems."

CONCLUSION

Neither GRiDPAD nor other pen-based computers will replace the feeling of writing with a real pen, but it can save time and money in a wide range of jobs. The GRiDPAD also reduces error. Using the GRiDPAD, information is recorded only once. Plus, you no longer have to worry about losing the information in transit to headquarters.

The GRiDPAD is not limited to the field. It can work as a desktop computer by adding a keyboard and attaching it to a stand. This would not replace more powerful, faster machines, but certainly, for a small company involved in market research, buying GRiDPADs would provide an effective dual-purpose solution. ■

RESOURCES:

GRiD Systems Corp.
PO Box 5003
Fremont, CA
94537-5003
(415)656-4700

Research Data Analysis, Inc.
450 Enterprise Court
Bloomfield Hills,
MI 48302
(313)332-5000

Advanced Data Research, Inc.
(313)375-9785

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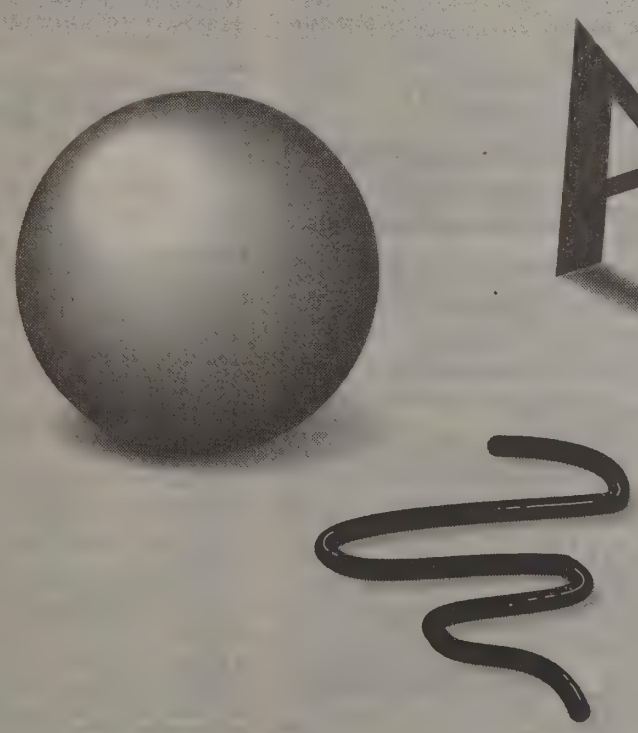

VIDEO BOARDS

TARGA+
NuVista+
ATVista
Vision VGA
DiaQuest

SOFTWARE

3D Studio
Topas
ShowPlace
Tips+
Mac Renderman
Tempra
Panorama+
Lumena
Macromind Director
Swivel 3D Pro
Rio
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386 - 33
TEMPO 386
386 - 25 / 20 / 16
386 - 16SX notebook
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1.2 Teac Drive, AT Power Supply
AT Case,101 KB,QA Plus software

486-33 EISA 2955
486-25 ISA / EISA ... 2155/2815
386-33 ACP / BCP .. 1455/1345
386-25/ w/o cache .. 1245/1095

DTK COMPUTER INC.

FCC B, 1MB, 64K cache, 1.2 Teac
IDE Controller, 2S 1P 1G
Tower Case, Power, 101 KB

486-25 2255
386-33 1355
386-25 FCC A
AT Case 1095
386-20SX AT Case ..855
386-16SX AT Case ..765
286-16 AT Case 595
286-12 AT Case 495

CENTRAL SYSTEM w/ intel motherboard

1MB, IDE Adapter
1.2 Teac, AT Power
AT Case, 101 KB

486-33 ..... call
386-33 ..... call
386-25 64K cache
..... 1255

1. 8087, 287, 387

CYRIX
83D87 - 16/20/25/33 ..... $260/285/385/440
IIT
2C87 - 8/10/12/20 ..... 175/185/215/255
3C87 - SX16/DX16 265
3C87 - 20/25/33 ..... 285/385/440
INTEL
8087 - 8/10 ..... 115/140
80287 - 6/8/10 ..... 125/175/195
80287XL 195
80387 - SX16/DX16 285
80387 - 20/25/33 ..... 345/435/545

2. 1Meg , 256K , 64K

DRAM
1 Meg x 1 - 8 ..... $4.90
256K - 8/10/12/15 ..... 1.45/1.40/1.40/1.40
256K x 4 - 8 ..... 5.10
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64K x 4 -10 ..... 2.50
SIMM
4 Meg x 9 - 8 265
1 Meg x 9 - 7/8/10 ..... 50/48/48
256K x 9 - 8 15
SIPP
1 Meg x 9 - 8/10 50
256K x 9 - 8/10 16
MEMORY Upgrade for Mac,IBM & others . call

3. ADD-ON CARDS

DTK
Monographic w/ Printer $38
640K RAM Card (XT only) 35
Hexa I/O (XT : S,P,G,Clock,Cont) 48
Penta I/O (XT : S,P,G,Clock) 39
AT I/O (S,P,G) 35
Mini AT I/O (S,P) 30
AT I/O w/ IDE Controller 69
AT I/O w/ IDE Controller (Non DTK) 50
Serial Card (XT only) 19
Printer Card (XT, AT) 19
Game Card (XT, AT) 19
EVEREX
Magic AT I/O 49
Magic AT I/O w/ Game port 57
MEMORY for Mac,Compaq & others ..... call

4. BOOKS

All New Books 15% off
Microsoft Press
Osborne MacGraw-Hill Press
Peachpit Press (Desktop Publishing)

5. C D ROM

SONY
CDU 531-11 500MB w/ Controller Card ... 495

6. CASES

AT Jr Case for XT $30
Baby AT w/ Power 105
AT Case 50
Baby Tower w/ Power 115
Mid Baby Tower w/ Power 145
Tower AT w/ 220W Power 175

7. CONTROLLERS

ADAPTEC
2322D 1:1 ESDI $195
1542B SCSI w/ kit 305
DTC
6280 1:1 ESDI 145
7280 1:1 MFM 70
7287 1:1 RLL 99
DTK
Floppy Controller (XT) 18
Controller 1.2 & 1.44 (XT,AT) 40
IDE Controller 35
IDE w/ AT I/O (2 S P,G) 69
FUTURE DOMAIN SCSI Controller
TMC 850 for XT (H only) ..... 85/145 kit
TMC 875 for XT (F & H) ..... 135/215 kit
TMC 860 for AT (H only) 125/145 DOS/265 kit
TMC 885 for AT (F & H) 145/175 DOS/265 kit
TMC 1660 for AT (H only) 165/205 DOS/295 kit
TMC 1680 for AT (F & H) 195/245 DOS/315 kit
SYSGEN
Omni Bridge (up to 4 floppies) 95
ULTRASTOR
ULT 12F/32 32K ESDI cache 185
ULT 12C/1 1MB ESDI cache 565
WESTERN DIGITAL
Gen Card (XT) 55
1003V 2:1 MFM 85
1006V 1:1 MFM 99
1006SR 1:1 RLL 115
1007 SE2 ESDI 155

8. DIGITIZERS

Calcomp 23120 12"x12" 4 button & pen ... 289
Selko DT3613 12"x12" 4 button & pen 289
SummaSketch II 12"x12" 4 button & pen ... 325

9. DRIVES

TEAC
360K 5.25" $60
720K 3.5" w/ frame 62
1.2MB 5.25" 68
1.44MB 3.5" w/ frame 68
CONNER (IDE)
CP-3000 40MB 25ms 3.5" 235
CP-3104 100MB 25ms 3.5" 445
CP-30104 120MB 485
CP-3204 200MB 16ms 3.5" 715
MAXTOR
4170-170 167MB 14ms ESDI 5.25" full 825
4380-380 338MB 16ms ESDI 5.25" full 1175
4380S-380 338MB 16ms SCSI 5.25" full 1175
8760-760 676MB 16ms ESDI 5.25" full 1820
LXT 213SY 200MB 16ms SCSI 3.5" 765
MICROSCIENCE
HH1090 80MB 25ms MFM 5.25" half ht .. 355
NEC
D3142 40MB 28ms MFM 3.5" 275
D5655 150MB 18ms ESDI 5.25" half ht .. 675
SEAGATE
ST-225 20MB MFM 5.25" half ht 190
ST-251-1 40MB 28ms MFM 5.25" half ht 245
ST-4097 80MB 28ms MFM 5.25" full ht . 555
ST-157A 40MB 28ms IDE 3.5" 215
ST-1102A 80MB 19ms IDE 3.5" 395
ST-1239A 230MB 15ms IDE 3.5" 705
ST-277N 64MB 28ms SCSI 5.25" half ht 345
ST-296N 84MB 28ms SCSI 5.25" half ht 375

10. EXTERNAL DRIVES

PACIFIC RIM
1.2MB for PS/2 (connect to motherboard) . 195
1.2MB for XT / AT (with controller) 215
1.44MB for XT / AT (with controller) 215
1.2MB for PC/Laptop (to printer port) 245
1.44 MB for PC / Laptop 245
1.2MB for Toshiba (excapt 1000,1100,1200) 195
40MB HD for PC / Laptop
(connect printer port & outlet power) . 595
100MB HD for PC / Laptop 895
SYSGEN
Bridge File 3.5" 720K/1.44MB 215
Bridge File 5.25" 360K/1.2MB 215
AT Adapter for Bridge File 3.5"/5.25" 58

10. KEYBOARDS

NORTHGATE OMNI
101NI / 102 ..... $74/74
Plus / Ultra 89/99
Keyboard cover for 101 / 102 / Plus / Ultra .15
OTHERS
KEYTRONIC 101 50
MAXI 101 45
MITSUMI 101 45
101 Keyboard cover 4
Wrist Pro (wrist support) 20

12. LAPTOPS

CANON
BJ-10e (Bubble jet printer, 4.5lb) $319
See Printers Section #21
EVEREX
Tempo LX 386-16SX, 1MB, VGA LCD
1.44FD, 21MB HD, DOS 4.01, 7lb .. 2095
2MB card 395
Battery 125
Charger 95
Modem 275
PANASONIC
CF-150B Backlit LCD
720K FD w/ carrying case 595
Battery for CF-150B 29
CF-170 8086 Backlit LCD
1.44 FD, 20MB HD 1575
TOSHIBA
T1000SE /T1000XE 999/1195
T1200XE 2085
T1600 - 20 / 40 ..... 2195/2495
2400 int modem 259
1MB for T1000SE / T1000XE 250
2MB for T1000SE / T1000XE 360
MEMORY for other laptops ..... call

13. LASER PRINTER ACCESSORIES

ADOBE see Adobe in Software section #22
AVERY
Laser Printer Labels for 5.25" diskettes 39
Laser Printer Labels for 3.5" diskettes 39
COMPUTER PERIPHERALS
Jet Page (for HP II, IIP, III) 325
Jet Memory 1MB (for HP IIP, III) 140
SuperSet + (425 Fonts Cartridge) 275
HP see HP in Printer section #20
IQ ENGINEERING
Super Cartridge 1
for all HP Laser&True HP Compatibles 225
Super Cartridge 2 for HP II, IID, IIP, III, IIID 295
Super Cartridge 2 & 2LC 395
Super Cartridge 3 for HP III, IIID 315
Desk Jet 500 Std / Pro 115/145
Desk Jet Plus Std / Pro 105/145
PACIFIC DATA see top of next page
PANASONIC see Panasonic in section #21
MEMORY for other Laser Printers ..... call

14. MEMORY CARDS

EVEREX
XT 2MB, EMS $55
Ram 3000 Deluxe (AT 3MB, EMS) 84
Ram 8000 (AT 8MB, EMS) 165
Ram 10000 (AT 10MB, EMS) 125
Ram II 4000 (PS/2-5,6,7,80) 175
INTEL
Above Board w/ 512K 295
MEMORY UPGRADE for Mac, IBM etc .. call

15. MODEMS & FAX

EVEREX
Evercom II (1200 Baud Internal) $48
Evercom 2400 Baud Internal 99
Evercom 2400 Baud Internal w/ MNP5 145
Evercom 2400 Baud External w/ MNP5 ...185
Fax Modem 2400/9600 Internal w/ MNP5 . 239
Pocket Modem for Laptop 2400 w/ MNP5 . 215
FRECOM
Fax 96 145
Fax 96 w/ 1 Liner & Far Fetch Fax 199
HAYES
9600 v.42 & v.25 BIS 665
Personal Modem 2400 165
SmartModem 2400B Internal 245
SmartModem 2400E External 385
INTEL
SatisFaxtion card 399
VIVA (Computer Peripherals)
2400 Baud External for IBM / Mac ... 115/125
2400 Baud External w/ send fax 125
2400 Baud External w/ MNP5(for IBM/Mac) 145

16. MONITORS

ADI
14" mono amber/paperwhite $109
14" VGA mono, 720x400 125
14" VGA, 1024x768, .28 325
HYUNDAI
12" mono 70
402B 14" VGA, 720x400, .39 259
MATSUSHITA
ViewPerfect 2 14" VGA, 640x480, .29 ... 295
ViewPerfect 3 14" ,1024x768, .29, Int 425
ViewSonic 4 14" , 1024x768, .29, Int 345
MITSUBISHI (w/ base)
HL6605ATK 16", 1280x1024, Non-Int ... 1095
HA3905ATK 20", 1024x768, Int 1550
HL6935ATK 20", 1280x1024, .31, Non-Int 1795
Cable 45
NANAO
9070S 16", 1024x768, .31, Non-Int 925
9070U 16", 1024x768, .28, Non-Int 995
9080I 16", 1024x768, .28 1355
NEC
2A 14", 800x600, .31 445
3D 14" Multisync, 1024x768, .28, Int 575
4D 16", 1024x768, .28, Non-Int 995
5D 20", 1280x1024, .31 2095
PANASONIC
1381 14", 1024x768, .28 375
POWER
Power 2 14" Super VGA, 1024x768, .29 .. 305
QUME
830 14", 640x480, .41 245
835 14", 1024x768, .28, Int 345
RELYSIS
RE1520 15", 1024x768, .31, Non-Int 545
14" EGA 325
SAMSUNG
CJ4686 14" VGA, 640x480, .52 225
CVB4581 14", 1024x768, .31, Int 335
CVB4997 14", 1024x768, .28, Int,Non-glare 355
CSA 7571 17", 1024x768, .31 895
SEIKO
CM1450 14", 1024x768, .31, Non-Int 615
CM2050 20", 1024x768, .31, Non-Int ... 1650
SONY
1304 14", 1024x768, .25, Non-Int 625
TAXAN
Super Vision 720 14" RGB 150
UV1000 20", 1280x1024, .31, Non-Int .. 1450

17. MOTHERBOARDS

DTK
8088 XT-12 ..... $69
286-12 150
386SX -16 / 20 ..... 355/495
386-25 w/o cache 655
386-33 64K cache 895
VLSI
286-12 / 16 ..... 125/175
386SX-16 345
MICRONICS
386-25 (no cache) BMP-ASIC 725
386-25 64K cache BCP-ASIC 895
385-33 64K cache ACP-ASIC 1055
386-33 64K cache BCP-ASIC 995
486-25 64K cache ISA/EISA 1795
486-33 64K cache EISA 2564

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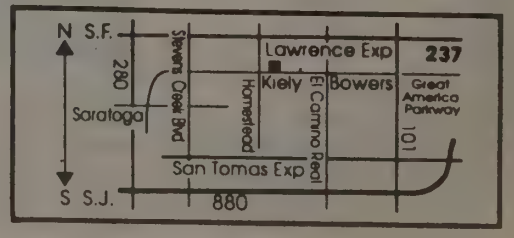

PACIFIC DATA PRODUCTS

HEWLETT PACKARD

FONT CARTRIDGES
- 25 In One! III (for HP II, IID, IIP,III) 265
- Headlines Cartridge (for HP II, IID, IIP) 185
- Complete Font Library (for HP III, IIID) 265
- Pacific Outlines I / II (for HP III, IIID) 185

POSTSCRIPT Emulation
- Pacific Page & 2MB (for HP II) 389
- Pacific Page P.E. (for HP IID,IIP,III,IIID) ... 325
- Pacific Page XL (for HP IIP,III,IIID) ..... call
- Pacific Page P.E. & Pacific Talk for Mac & HP IID,IIP,III,IIID 450
- Pacific Page XL & PacificTalk ..... call
- Pacific Type 265

MEMORY
- 1-2-4 Plus (for HP II, IID)
  - 1MB $140
  - 2MB 190
  - 4MB 290
- Pacific 4 Memory (for HP IIP, III)
  - 1MB 120
  - 2MB 170
  - 4MB 270
- LP Memory (for IBM 4019E)
  - 1MB 140
  - 2MB 190
  - 3.5MB 265
- Pacific T Memory (for Epson 6000)
  - 2MB / 4MB 225/325

OTHERS
- Driver & Cable (for Mac & HP II) 115
- Pacific Bar Code (for HP II) 315
- Pacific Bar Code P.E. (for HP IID, IIP, III) . 315
- Pacific Connect (for.HP II, IID, IIP, III)
  - connect 5 PC or 4 Mac to a printer
  - 256K 265
  - 1.25 MB 299
- Pacific Print (for network & HP II, IID, IIP, III, IIID) . 225
- Plotter in a Cartridge (for HP II) 225
- Plotter in a Cartridge P.E.(for HP IID, IIP, III) 225

MICRONICS ACCESSORIES
- 4MB Piggy Back (to 8MB) 595
- 16MB Memory Card 150
- 32K 2-Way cache 55
- 387 Adaptor 65
- BOIS Award / Phoenix (386) 60/pair
- Keyboard Chip 30

18. MOUSE

LOGITECH
- C-9 Mouse Serial / Bus $61/69
- C-9 Serial Mouse w/ Windows 3.0 130
- Catchword 110
- Cordless Mouse 139
- Mouseman Serial / Bus 69/75
- Scanman Plus / 256 ..... 139/285
- Trackman Serial / Bus 80/85

MICROSOFT
- 200PPI Serial 69
- 400 PPI Serial / Bus 99

MOUSE SYSTEMS
- Omni Mouse II 35
- PC Mouse III .....
- PC Mouse III w/ Power Panel 89
- PC Trackball 56
- The White Mouse 56

SCAN PLUS (sheet-fed scanner) ..... call

19. NETWORK

3 COM
- 3C503 8 bit 199
  - 5 packs (5 boards 1 manual) 799
- 3C503-TP 8 bit / 5 packs 269/1160
- 3C505 16 bit, 256K / 5 packs 579/2620
- 3C507 16 bit / 5 packs 289/1250

WESTERN DIGITAL
- Ethercard Plus Elite 8bit / 16 bit 145/185
- Netware Boot Rom 34

CABLES & ACCESSORIES
- RG58 (BNC Male Connectors on each end) Thin Ethernet Cable 10'/25'/50' .. 15/20/30
- RG58-Twist 3
- RG58-Crimp 2.80
- RG58 50 Ohm Terminator 4.50
- BNC "T" Connector F/M/F 4.50

20. POWER SUPPLY

- 150W (XT) $45
- 200W for Baby AT 60
- 220W (AT) 60
- 220W for Tower 78
- Hard Disk Drive Casing 65W 69
- 330W / 500W / 1200W (UPS) 199/399/899

21. PRINTERS

CANON
- BJ-10e w/ bag (Bubble jet)360 dpi,37K Buf$319
  - Auto Sheet Feeder 85
  - Battery 45
  - Print Head Cartridge 22

CITIZEN
- GSX 200 (9 pin) 165
- GSX 140 (24 pin) 285
  - Color Option for above printers 45
  - Auto Sheet Feeder for GSX 140 129
- GSX 145 (24 pin, 132 column) 415
  - Color option for GSX 145 65

EVEREX ABATON
- Postscript Laser (3MB) 1795

FUJITSU
- DL 1100 mono / color 295/345
- DL 3400 365
  - color kit 95
- DL 4600 5-part form, bar code printing mono / color 995/1129

HEWLETT PACKARD
- Desk Jet 500 489
- Laser Jet IIP w/ toner 855
- Laser Jet III w/ toner 1555
- Laser Jet IIID w/ toner 2495
- Accessories:
  - Envelope Cassette (15 envelopes) ... 69
  - HP Postscript Cartridge 495
  - Legal Tray for HP II & III 69
  - Lower Cassette for IIP 160
  - Paper Tray for IIP 69
  - Toner for HP II / IIP/ III 85/75/85

PANASONIC
- 1180 9 pin 145
- 1191 9 pin 225
- 1123 24 pin 265
- 1124 24 pin 249
- 1624 24 pin wide carriage 349
  - 32K Buffer for above printers 65
  - Serial interface card 65
- 4420 Laser 775
  - 1MB Memory Card 199
  - Developer KX-PDP2 95
  - Drum KX-PDM2 99
  - Envelope Tray KX-P431 59
  - Fonts Card 95
  - Legal Tray KX-P425 45
  - Toner KX-P451 39
- 4450i Laser 1175
  - 1MB Memory Card 199
  - Developer KX-PDP1 95
  - Drum KX-PDM1 145
  - Envelope Tray KX-P430 59
  - Fonts Card 95
  - Legal Tray KX-P420 45
  - Toner KX-P450 35
- 4455 (Postscript) 1975
  - same as 4450i

QMS
- QMS-PS 410 4ppm, 2MB, 45 Fonts 1895
  - 1MB / 2MB Memory 299/465
  - Envelope Tray 69
  - Legal / Letter Tray 69
  - Lower Paper Cassette 160
  - Toner 95
- QMS-PS 810 8ppm, 2MB 2995
- QMS-PS 2210 / 2220 ..... call
- ColorScript 100-10 4MB, 35 Fonts 6595
- ColorScript 100-30i ..... call

SEIKO
- Smart label Printer (IBM/APPLE) 175

PELICAN
- All type ribbons ..... visit us
- Toner for Laser Printers ..... visit us

22. SOFTWARE

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- Complete Type Library ..... call
- Illustrator for Mac / Windows 3.0 ..... 335/285
- Plus Pack for Mac / Windows 3.0 135
- Postscript Cartridge for HP II 285
- Streamline for Windows 3.0 225
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- Type Manager for Mac / Windows 3.0 62
- Type Set 1/2/3 for Mac / Win 3.0 .. 75/75/105

MICROSOFT
- DOS 3.3 / 4.01 60
- DOS 4.01 w/ Windows 3.0 130
- Entertainment Pack for Windows 3.0 35
- Excel for Windows 3.0 299
- Flight Simulator 39
  - Maxx Control Yoke 45
  - Maxx Pedals (IBM) 30
- Learning DOS 35
- Microsoft C 6.0 309
- Mouse Serial 200PPI 69
- Mouse Serial / Bus 400PPI 99
- Mouse w/ Paintbrush 99
- Mouse w/ Windows 3.0 157
- Office (Excel, Word, Power Point) 1.5 595
- OS/2 Presentation Manager Tool Kit 1.21 . 309
- Power Point for Windows 299
- Productivity Pack for Windows 45
- Project for Windows 1.0 429
- Quick Basic 4.5 62
- Quick C Compiler w/ Quick Assembler 125
- Software Development Kit 3.0 309
- Windows 3.0 69
- Word 5.1 207
- Word for Windows 3.0 309
- Works 2.0 99
- Works w/ Mouse 2.0 159

MICROSOFT FOR MACINTOSH
- E-Mail Mac Server 2.0 259
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- Office (Word, Excel, Powerpoint, Mail) 539
- Powerpoint 2.01 259
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  - 286 v2.3 79
  - 386 v2.3 141
- DR DOS 5.0 upgrade (for users w/ any DOS) 75
- Fastback Plus 112
- Geoworks Ensemble 129
- Grammatik IV 2.0 57
- Grammatik IV for Windows 57
- HP New Wave 3.0 109
- Hardvard Graphics 2.3 295
- Individual Software ..... 39 & under
- LapLink Rel 3 95
- Lotus 1-2-3 Rel 3.1 369
- MacPrint 95
- More Fonts 85
- Norton
  - Commander 3.0 89
  - Utility Advanced 4.5 89
  - Utility 5.0 115
- PC Tools 6.0 89
- PFS: First Choice (w/ Prodigy start-up kit) .. 85
- Pacioli 2000 24
- PageMaker for Windows 4.0 479
- Personal Lawyer/ Lifestyles 55
- Quarterdeck
  - Expanded Memory Manager 386 v5.1 . 69
  - Manifest 45
  - Qram 59
- Quicken for IBM/Mac 39
- Software Source (Public Domain) 3
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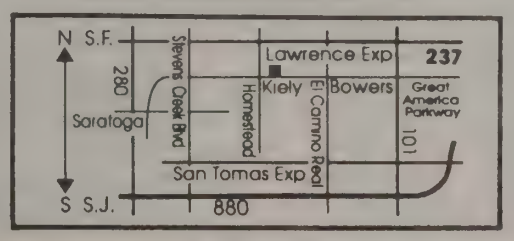

BMUG Awaits Gates

Plus: Mac Enhancements For The Disabled, BMUG Hardware Hacks

BY DAVID MORGENSTERN

BMUG

What a week! I feel like the read/write head of a badly fragmented hard drive, jumping around town with a thousand small jobs. The only platter I'd like to come in contact with is at the dinner table.

I've put my old 512e Macintosh in our bedroom, which is also the television viewing headquarters of our flat. Sometimes I like to multi-task, and watch a baseball game with one eye, while I compute with the other.

My daughter was utterly involved in an appalling, mindless teenage situation comedy, which must have interfered with her usually acute sense of smell. She was oblivious to an awful burning odor. Was it outside? No. The Mac? Yes!

Wouldn't you know that everything checks out fine on the repair bench?

BILL GATES IS COMING! BILL GATES IS COMING!

Mr. What-Me-Worry-I-Can-Buy-You Microsoft has signed up to come to a BMUG meeting. This is not something to get the BMUG regulars' blood boiling, since Mr. Billionaire has promised to speak and backed out more times than any other presenter in BMUG history. The Word is that he's still on for our April 25 meeting.

Copyright © 1991 by David Morgenstern. All rights reserved worldwide. *David Morgenstern is a Bay Area "MacNurturer" and BMUG member. David is DMORGENSTERN on MacNET, 72030, 1607 on CompuServe, and himself at (415)549-BMUG.*

Gates has had no trouble finding time in his busy schedule to meet with other user groups—the Boston Computer Society and the San Francisco PC Users Group, to name a couple. He's obviously heard about our intolerance for marketing hyperbole and hasn't wanted to get his feet wet. I find it suspicious that a month after a major unauthorized biography is announced to be in the works, Bill starts taking care of unfinished business. Chicken, Me?

Here are some of the latest Microsoft questions that have floated through the BMUG collective consciousness:

•What is your response to continuing allegations of the inelegance of Microsoft products? Has Microsoft focused too much on the machine/programming needs of its software and ignored the human/aesthetic needs of its users?

There is a continuing battle over the feel of Microsoft programs. They're still filled with non-standard ways of doing things. Headers and footers in Excel 3.0 must still be defined with special codes. Other spreadsheets just let you type away with the text.

•We've heard that Microsoft hires software engineers based almost exclusively on their score on an advanced mathematics exam. Peer reviews are then used every six months to cull the bottom 10%. Is this true? If so, what's your reasoning behind such a scheme? Do you think that raw mathematical ability can replace the creativity needed for software design? How do you keep your engineers from forming cliques and giving low scores to others whose personalities they dislike, or of whom they are jealous?

Perhaps there are some clues to be found in the 1976 XEROX PARC thesis of Microsoft's head programmer, Charles Simonyi. Meta-*Programming: A Software Production Method* "describes an organizational schema, designed to yield very high programming productivity in a simplified task environment which excludes scheduling, system design, documentation, and other engineering tasks."

• According to *Time*, Gates has amassed an immense personal fortune. Does he support any particular charities, non-profit organizations, or other "good works"? What is his definition of social responsibility for the super-rich?

Who loves ya, Billy Baby? BMUG's a 501c3 non-profit, and always open to donations...

• Will Microsoft follow Apple's standards for dealing with Interapplication Communication (IAC) under System 7.0, or will they keep insisting that they know better?

Some of Microsoft's old customers have decided not to wait for anything NeXT-ish. Compaq just signed up with Silicon Graphics to get some workstation firepower.

This question stems from some Microsoft chutzpah announced at COMDEX. They're trying to sell Macintosh developers on a set of operating system extensions, Application Programming Interface (API), that will compete with Apple's System 7.0 IAC software. IAC will enable programs to talk and drive each other.

Microsoft's alternative technology would also work in Windows applications, so supposedly programs running in a mixed PC environment will be able to operate more efficiently. They claim that their IAC-ware (run-

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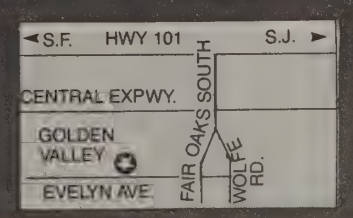

ning on top of System 7.0) will work better than the system-level Apple code. The way that Windows works better than the Mac Operating System?

•In 1987 Gates allied Microsoft with IBM to create OS/2, a new graphic interface multitasking multiuser operating system. Until a year ago, Gates claimed total support for the system. Given this history, why should we ever trust anything Microsoft says?

Microsoft has always been a bit schizophrenic. It develops the operating systems, applications, and programming tools for a wide range of platforms. Sometimes it even works against itself.

Unlike NeXT, which built its house on top of an old foundation in UNIX, Microsoft decided against refining its own XENIX product. Instead of creating a single graphical environment that could operate on any operating system, they split up their efforts. OS/2 Presentation Manager was developed for the supposedly next-generation PS/2 machines, while Windows was for the DOS-based computers. Windows won.

The Federal Trade Commission has been investigating the OS/2-Windows mess. The publishers that spent millions backing OS/2 products are feeling shafted and are scrambling to play catch-up with Windows versions. Microsoft already has its own Windows applications in the marketplace.

•Steve Jobs said that it takes a full five years to develop an operating system from scratch. Why does Gates think that he'll be able to get their OS/2 replacement, UNIX-killer New *Technology OS,* out the door sooner than 1994?

The computer industry has never done well in matching planned product releases with actual shipping dates. They're usually off by a year, or two. Even if a product makes it out the door, it may take months to fix all the bugs. Microsoft has done its part in burning users, and developers, with delays, false promises, and premature releases. The other developers are playing the same games, but they don't make as big a splash in the water.

Some of Microsoft's old customers have decided not to wait for anything NeXT-ish: Compaq just signed up with Silicon Graphics to get some workstation firepower.

THE MAC ASSISTIVE

I had the good fortune to attend MacAble—Tools for Independence, a small show sponsored by the UC Disabled Student's Program and Apple. It demonstrated hardware and software for users that have difficulties with hearing, mobility, and vision.

The Macintosh has the same attractions for all users—disabled and not. Everyone wants a computer that features an easy-to-learn graphic user interface, integrated sound and graphics, and neat programs. Unfortunately, in the past, the Mac was rarely recommended to disabled users. It was hard to program, and even worse, it was expensive. These were obstacles for anyone that wanted to purchase a Macintosh, but especially for disabled users.

Tom Gray from the Assistive Device Center at Cal State University, Sacramento, was impressed with the range of Mac products at the show. His group specializes in educating and training disabled people of all ages to use technologies that can make their lives easier and productive. They try to match a person's goals, physical needs, and cognitive characteristics to the computer system. Tom said that the devices available for the Macintosh

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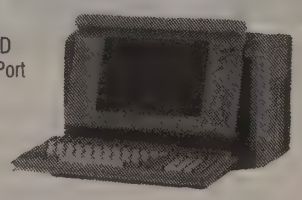

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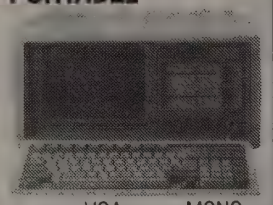

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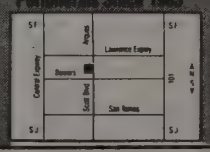

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address all the issues of disability, and do so quite well.

Apple tries to push the notion that the Mac had disabled users in mind when it created the blinking menubar (when the volume control is set to zero) and MacroMaker. These additions to the Macintosh are useful to almost everyone. CloseView and Easy Access seem to have a stronger claim to being specifically designed for the disabled user, although some cynics believe they were concocted in response to PC-using critics that hated the mouse and the small screen.

Apple has a special group coordinating its disability efforts called Worldwide Disability Solutions. They've put out *Solutions*, a two-disk set of stacks about disability products for Macintosh and Apple II computers. It has the names and addresses of hundreds of hardware and software aids and resources. The group can be contacted by calling 1-800-732-3131, ext. 950.

Third-party developers have really gotten serious about getting the devices that disabled users need to operate the Mac. Here are a few of the things I saw:

•The Prentke Romich Company is a leader in communication technology for people who have difficulty speaking. Their Touch Talker product is a combination speech synthesis, computer, and keyboard device that allows users to quickly communicate words. The device includes a special set of icon labeled keys to access several thousand commonly used words and phrases, without having to type each letter one at a time. W*hat time are we going home?* might be expressed by the string of Question+Time+Home symbols. With the use of a new interface, the Talker can be used to operate a computer, including a Macintosh.

For those who can't use a keyboard, Prentkey Romich showed a headmouse device called the HeadMaster. It includes a switch that's operated by blowing a puff of air. We saw it used with a special word processor that displays a dictionary of commonly used words as each letter is typed. Hit a letter, and dozens of words beginning with that letter are shown available for selecting.

•Articulate Systems' Voice Navigator II was also being demonstrated. It's a little black box with a long gooseneck microphone attached. It digitizes spoken sound, processes the sound, and then performs a user defined command. The device doesn't "know" English, so any language, or sound is treated as a specified word. This is great for people who have trouble speaking clearly. As long as they can reproduce the word somewhat consistently, the action will be carried out.

The interface to teach the Navigator is really slick. It automatically runs through an application, and gets all the commands you might need using the product. It already knows the ones you defined for other applications, and the Finder—you don't want a redundant Open for every application on your hard drive.

The early versions of the Navigator were a little unreliable, but the latest release really works like a charm. The demonstrations of using voice commands *with* the mouse were very impressive. Users say it takes some getting used to, but really does make people more productive.

•Brothers Alan and Mark Hayutin showed a great mouse hack with a BMUG twist. The two run Venture Quest, a pre-press typesetting business in Berkeley.

Almost ten years ago, after an accident, Alan found himself in a wheelchair, with limited control of his hands. He and his brother wanted to use a computer but, like many of us, were driven nuts with MS-DOS computers. They knew they were on the right track when they bought a Macintosh in 1984. But Alan had trouble with the mouse.

He could move the mouse, but his limited finger dexterity prevented him from clicking the button. They came up with the idea of separating the click function from the mouse. The Apple Disabilities Workshop in Cupertino came up with a special two-headed serial cable that connected a mouse and a click switch that he could control with his other hand. Alan, who thought that he would never draw again, was back at the sketchpad.

Recently the brothers upgraded their system to a Macintosh IIci, which brought some new headaches—their mouse hack was obsolete. The new Macs use the Apple Desktop Bus mouse, instead of the serial mouse used with the original 128K-through-Plus-flavored Macintosh models.

Apple engineers were not able to come up with the answer. Mark said, "They came up with several solutions, none of which worked." One of the suggestions was to use two mice at once, which will never work since each mouse is independent, preempting the business of the other.

Fortunately they hooked up with BMUG's hardware guru, Chuck Meyer of CJS Systems. He came up with the correct method for finding the pin-outs for the switch. The clicking continues, and the brothers promised to write up the adventure, complete with diagrams, for the next BMUG Newsletter.

•A device that wasn't at the show, but is recommended by a BMUGer with a slight motor disability, is the new MouseMan three-button mouse from Logitech. The buttons are user programmable and available in left- or right-handed versions. One button can be a regular mouse click, while the others can be a drag-hold and release. This can give the user extra time to get the mouse position just right, without having to hold down the button. It also has a nice curved ergonomic shape.

BITS AND BYTES

•The hardware hack is alive and well at BMUG. Previous devices that have come through the BMUG braintrust include the BMUGNet kit (now Farallon's PhoneNet), the MacRecorder kit (now also a Farallon product), the MacChimney kit (the new Macs have a fan built-in), and super-long keyboard cables (the BMUG member who made the cables is in prison for murder). Now comes the BMUG LC Video Adapter kit from long-time member Jay James.

Apple put in a revolutionary (for Apple) capability into the Macintosh LC—one of the video formats supported by the LC's on-board video circuitry is the ubiquitous Video Graphics Array (VGA)! As the dominant video technology today, VGA benefits from the huge MS-DOS market, where intense competition keeps prices down and provides a wide array of choices.

The kit is a special hardware adapter to match the LC's outgoing video signals to the VGA monitor's incoming ones, and to switch from the Mac's two-row DA-15 connector to the VGA's three-row high-density D-15 connector. Also, the Mac needs to know that it should slow down the horizontal scan rate to the VGA's 31.5 kHz.

The kit includes the wires, clips, plugs, and plastic shell you'll need to make the adapter. It's a tricky soldering job, so if the smell of burning solder flux doesn't turn you on, you

UPCOMING EVENTS:

April 25 Bill Gates comes to BMUG.
April 29 BMUG West meeting at SF Exploratorium museum. MapInfo MapInfo, Radius ImpressIt (compression) & Pivot.
May 2 TSI 68040 Accelerators, Reactor Spaceship Warlock.
May 9 Computed Designs Swing Shift , Insignia Solutions Soft PC.
May 16 Finals. No main meeting.
May 23 Finals. No main meeting.
May 27 BMUG West meeting at SF Exploratorium museum. Digital FX *Video FX.*
May 30 Power Up Address Book Plus, Fast Forms, International. Business Software Data Club.

• Your Expanding Infosphere, Saturdays at noon, KALW-FM 91.7, has BMUG meeting announcements. Check it out!

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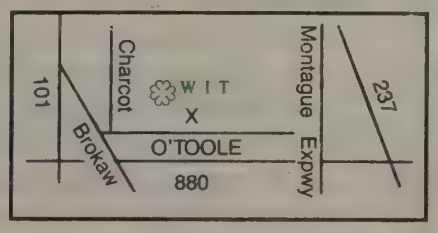

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You need to be careful about which VGA monitor you buy. The Mac LC's video output is weak, supporting only one TTL load. Many VGA monitors, even high-quality ones, sink more current than that. But the LC is so portable you can easily take it to the store to test it out.

•I often have the devil of a time fitting cable plugs into device ports, especially the eight pin mini-circular jobs used on the ImageWriter II. Take out your permanent felt-tip pen and mark the plug and printer case. I like big black dots. This will not hurt the resale value (well not much) and will save you a dose of cable fumbling.

•The BMUG family lost a couple of good friends in the past couple of months. Mark Chen, a member of our core group of volunteers, died from a heart attack. Mark helped many members on the BMUG HelpLine, and at meetings, with his great Macintosh knowledge, and helped everyone in the office with his tremendous sense of humor. He was only 28 years old.

Jay Hodgdon was the president of San Francisco's GMUG (Gay Macintosh Users Group). He was a very creative person with a lot of spirit. He worked on the development team of HyperCard 2.0. We will all miss his energy and talent. ■

What Is BMUG?

BMUG is an educational, nonprofit consumer advocacy group organized to share information and provide critical direction to users and developers in the computer community worldwide.

Like any growing organization, it is many different things to its ten thousand international members. BMUG supports many Special Interest Groups (SIGs), an eight-line Bulletin Board System (BBS), free HelpLine, software library, weekly meetings, publications, and much more. BMUG also puts out a semi-annual 400+ page book that we call our "newsletter." Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6–9 (or whenever we finish), in the Physical Sciences Lecture Hall on the UC campus. BMUG West is a meeting held monthly in the Exploratorium, San Francisco's science museum.

The BMUG Office, 2055 Center Street (a half block from the Berkeley BART Station) is open to the public from 9 am to 5 pm. Please come by and say hello, meet other members, and hang out.

The BMUG HelpLine, (415)849-HELP, and our fax number, (415)849-9026, provide technical assistance and telephonic hand-holding during business hours (11 am–5 pm). If your question can't be answered on the spot, we try to get you in touch with someone who can help. Of course, not every problem can have a happy ending—but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around, with 600+ double-sided disks filled with the latest versions of public domain or shareware programs and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *PD ROM™ Version II*, our library, and more on CD-ROM.

Our BBS offers many of the latest versions of files in our software library as well as news, private mail, rumors, etc. The BMUG BBS is part of the worldwide EchoMac Network on FIDOnet (161/444); by calling a local FIDOnet BBS in your area, you would then be able to get in touch with us wherever you are, as well as send mail to users everywhere! BMUG is now a part of the international USENET network (apple!bmug!user.name@sun.com) or (user.name@BMUG.FIDONET.ORG). With our multi-line capability you are now able to have access to BMUG almost 24 hours a day. It's easy to use, fun, and a great resource.

To get some further information about BMUG please write to: BMUG, 1442A Walnut Street #62, Berkeley, CA 94709. If you prefer to phone our business office call (415)549-BMUG, or FAX (415)849-9026

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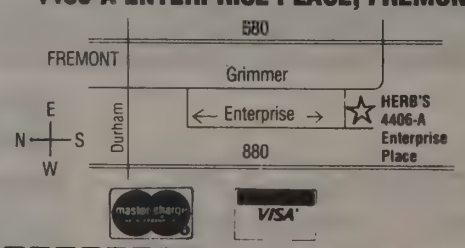

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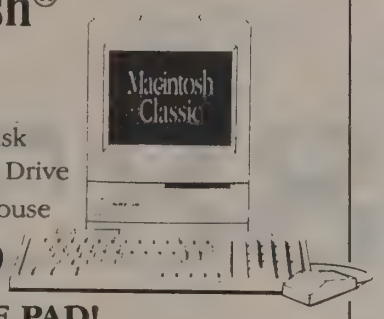

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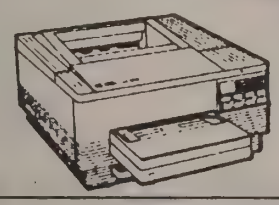

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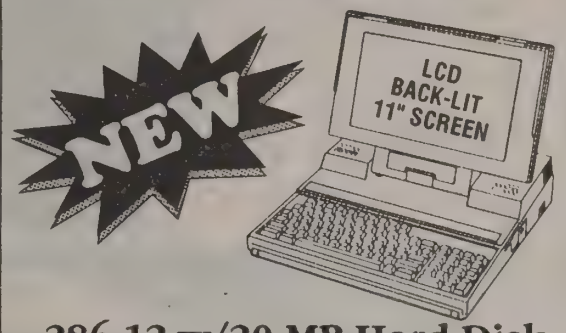

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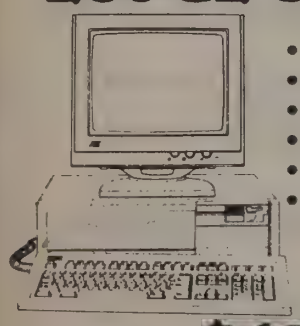

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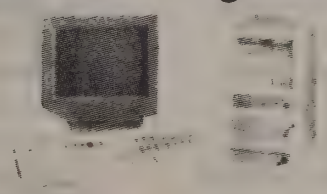

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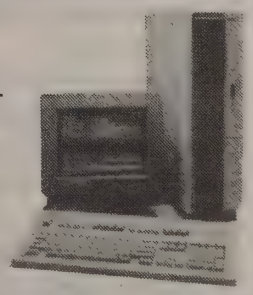

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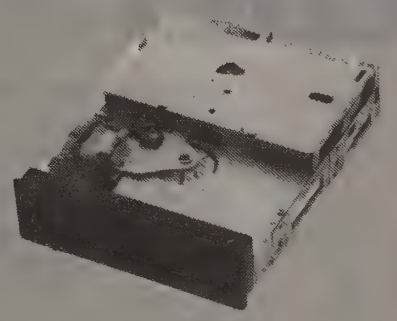

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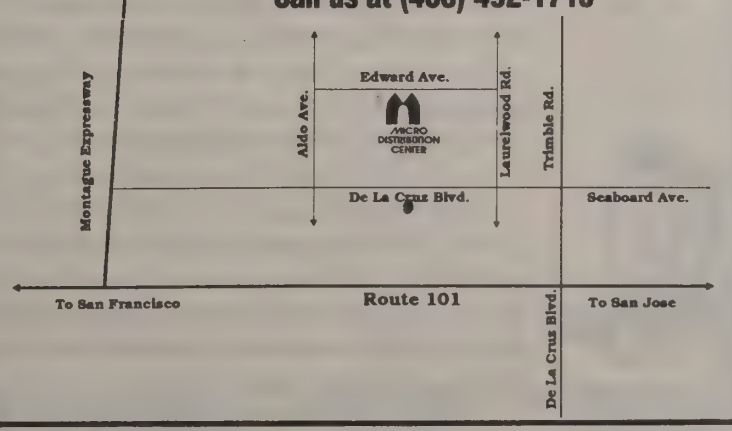

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Professional Image Tools

Processing And Storing Graphics On The Amiga

BY MATTHEW LEEDS

Last year I reviewed The Art Department (TAD) from ASDG. It's an image rendering program that can load image files from a variety of programs, both native Amiga and otherwise, and render them on the screen with better results in many cases than the originating program. While TAD is still available, an improved version, Art Department Professional (ADPRO), promises to become one of the most widely used tools for many Amiga-based image processing, rendering and image conversion applications, especially in the new realm of 24-bit (16.7 million color) Amiga imaging.

ADPRO

AMIGA

ADPRO supports "compositing" of graphic elements into 24-bit images, ARexx control and hundreds of image processing operations. Loader and Saver modules convert to and from a variety of Amiga and non-Amiga image formats and control a growing number of imaging hardware devices. A system of Operator Modules lets ASDG make product enhancements without requiring new versions of the core product.

Application areas which can immediately benefit from ADPRO include video and slide production, desktop publishing, satellite imaging and computer art. ADPRO also permits easy conversion of images to and from a number of Amiga, MS-DOS, and Mac image formats.

ADPRO imports and saves images in various formats using a system of standalone runtime software modules called Loaders and Savers. These modules are not only used to convert images to and from virtually any image format; Loaders and Savers also serve as general purpose front-ends for controlling external imaging hardware, such as scanners, film recorders, and display boards.

Loaders which come with ADPRO include Super-IFF, DV21, Sculpt 4D, Turbo Silver, GIF, PCX, Deluxe Paint II Enhanced, Screen Loader and Backdrop generator. Savers include Super-IFF, Sculpt 4D, Turbo Silver, GIF, PCX, Deluxe Paint II Enhanced and direct support for the Mimetics Frame Buffer. In addition, a PostScript Saver can save images in EPS (Encapsulated PostScript), PostScript, or Color PostScript formats. ADPRO can quickly generate 12- and 24-bit electronic color separations for high quality printing.

Even if you don't have a 24-bit display board or paint program, you can use ADPRO to blend and edit images of up to 24 bitplanes of color information. With Image Compositing, you can insert bitmapped, scanned images into a ray traced scene. To this end, users can draw filled and unfilled rectangles, create gradated backgrounds, or adjust the transparency and visual mix of elements.

In addition to standard image manipulations (including cropping, arbitrary scaling, 90 degree rotations, horizontal and vertical flips), ADPRO will perform color to grayscale conversions and produce negatives or line art from any color or grayscale image. It will even perform three- and four-color separations. Special effects facilities are available for "solarizing" and "posterizing" images, while other tools help you remove isolated pixels or compensate for video smear. ADPRO will also address the Microillusions Transport Controller.

The two programs share some capability, but ADPRO is far more powerful. In general, TAD is all you will need to make the best possible rendering of graphics for display on the Amiga. ADPRO, meanwhile, is right for professional users who require image format conversion, batch processing, control of graphics peripherals, or 24 bitplane image compositing.

IMAGE FINDER

The proliferation of image creation programs on the Amiga has been a great asset to Amiga artists. The diversity of tools has given free rein to the creative talents of those who formerly could only dream of owning a graphics-capable color system. One side effect of this, however, has been a tidal wave of images. Trying to keep track of images, both for the individual artist and anyone else who might

Copyright © 1991. All rights reserved. *Matthew Leeds has been involved in the high tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics, and related fields.*

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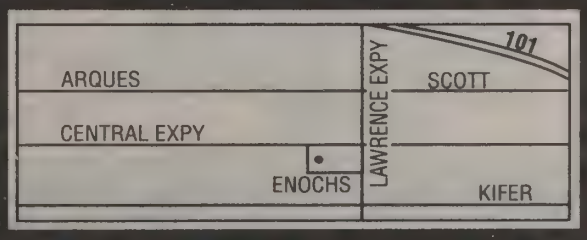

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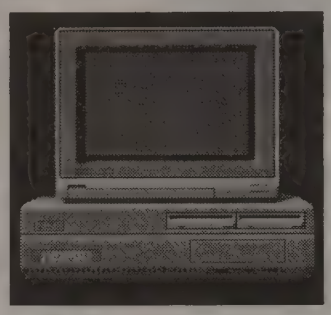

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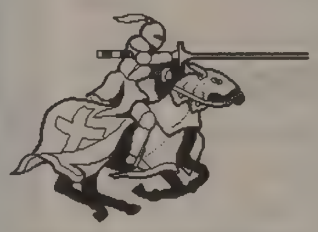

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make use of them, has been difficult if not impossible. That is no longer the case.

ImageFinder, a new utility program from Zardoz Software, creates an index of all IFF and ANIM images on a disk. That index includes a thumbnail representation of the image, its location, size, and type. If that were all ImageFinder did, it would be well worth its price, but it does far more.

The program is the brainchild of Jim Goodnow, former VP of Manx Software, and author of the Aztec C compiler for the Amiga. This is clearly an Amiga program, with many wonderful touches built in that could only be done on an Amiga. For example, the program can run in background, multitasking gracefully, waiting for you to create a new image with any program. It will then add that image to a catalog index automatically.

Working in your favorite paint program and want to load a particular image but can't find it? Just hotkey ImageFinder to the front, use its index search to find the image, preview it by double-clicking on the thumbnail, and when you've made your final selection, ImageFinder will pop the directory and filename into the file requester of your paint program. It even works with DPaint.

You can sort image indexes by directory, file name, file size, image type, or even the primary or secondary color of the image. Each thumbnail is stored with its own palette information, so that you can preview each in its correct colors. You can create multiple indexes, and sort and access any set of them as a single index.

You can control the size of the thumbnails created for each index, the technique used to create the thumbnail, the number of colors used, and, for ANIM files, which frame of the ANIM is used for the thumbnail. Oh yes, the entire program can be controlled via AREXX.

Virtually every feature and function can be customized. The hotkeys can be set, the amount of memory used can be controlled; in case you can't tell, I like this program. Go out and buy it.

RESOURCES:

ASDG
925 Stewart St.
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53713

Zardoz Software
6114 LaSalle Ave.
Suite 304
Oakland, CA
94116

MISCELLANEOUS

In other news, *Amiga Plus* magazine has given up the ghost. *AmigaWorld* has taken over the subscription list and will be fulfilling all outstanding subscriptions. This essentially cuts the number of Amiga-specific magazines down to three, not counting the new tech journals from AW and Amazing.

Commodore has cut the price on the Amiga 2000 and 3000 product line and some of their peripherals. Reductions range from 6% to 26% on systems, and deeper still on some peripherals. The AT bridgeboard was cut 50%, as was the 2091 hard drive controller. This makes an expandable Amiga an even better bargain. Commodore also announced a new service program for A2000 and A3000 machines purchased from authorized dealers. This provides a 24-hour toll-free helpline and next day on-site repairs for one year. The target is next-day service, provided that a service request is made by 4:00 p.m. local time. ■

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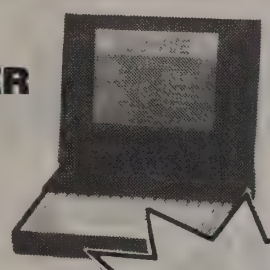

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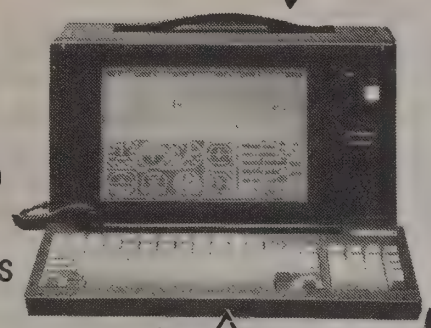

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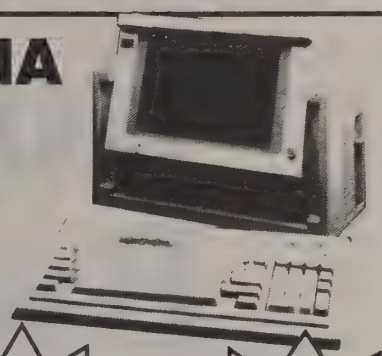

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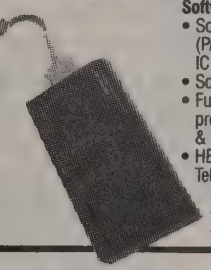

Software Features:
- Software for EPROM, EEPROM, BiPolar PROM, Programmable Array Logic (PAL, CMOS, PAL, GAL, PEEL, EPLD & FPL) Microcomputer (8748, 8751 & Z8 Series), IC Test (TTL 74/54 & CMOS 40/45 series) and Memory Test.
- Software rapid upgrades by floppy disk
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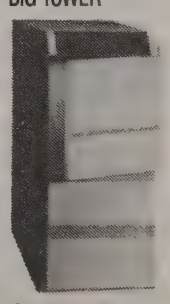
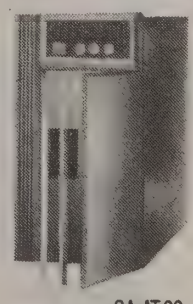


SE-AT-29

MINI TOWER



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Good News/ Bad News

Updates, Delays, Births And Deaths

BY DAVID HAWKINS

Atari's much-awaited new machines continue to be much-awaited. The new TT seems to still be in the bad news area at this moment—I haven't been able to find one in the local stores, and so far I haven't received a promised review unit. So I'm still waiting to get my hands on one of these and report back to you. There are some rumors of STe's being sold at certain dealers.

NEOCEPT GONE

Neocept is no more. They're the people who did WordUp, which had been my favorite word processing program on the ST. If you're a WordUp owner and didn't get the upgrade to version 3.0, check with your local dealer, or call E. Arthur Brown at (612)762-8847.

WORDFLAIR II NOT GONE

The good news is that Wordflair II, also an excellent word processor, is available. My plans are to upgrade soon and make Wordflair my word processor of choice. For more information, contact Goldleaf Publishing, Inc., 700 Larkspur Landing Circle, Suite 199, Larkspur, CA 94939, or call (415)461-5703, between 9 am and 4 pm, Pacific Time.

ATARIST

USER GROUPS

More good news: there are active user groups out there to help you get more out of your Atari. For example, the San Leandro Computer Club has started a SIG for desktop publishing. The contact person is Ray Thomas, at (415)791-9158. Other SIGs at the SLCC include telecommunications, music, business, and Atari 8-bit interests. For more information about SLCC, write to SLCC, P.O. Box 1506, San Leandro, CA 94577-0374.

If you're not in the Bay Area, then check the listings in the back of *MicroTimes* for an appropriate computer club or users group near you.

The February/March issue of *START* includes a disk that lists over 250 Atari user groups. Also note that *START* has now switched to a bimonthly schedule.

Copyright© 1991 by David Hawkins. All rights reserved. *David Hawkins is the host of the Atari conference on The WELL (415/332-6106); send email to dhawk. He has one of the first Atari ST 1040s sold in San Francisco.*

NEW MAGAZINE

Ray Thomas also tells me that there's now a magazine just for desktop publishing on the Atari. It's called *Radical Type*. The address is PO Box 107-SLC, Lazo, BC, VOR 2KO, Canada. The subscription rate is $15.95—be sure to use the appropriate postage to get your letter to them in Canada.

GAMES

More good news about games—The Fool's Errand is now available for the Atari. I had seen it a few years ago on the Macintosh and was impressed—it's a series of puzzles that the Fool must solve while searching for fourteen lost treasures. The list price is $49.95, and it's from Miles Computing, 5115 Douglas Fir Rd., Suite 1, Calabasas, CA 91302, (800)245-4525.

I've seen a couple of editors for Dungeon Master and Chaos Strikes Back. These allow you to modify the dungeon—e.g., you can change the doors so they're already open or easier to open. They also will take out pits, walls, and other obstacles. If you're looking for a program like this, check out Cartographer from DreamPark Development, 1390 So. 1100 E, Suite 104, Salt Lake City, UT 84105, or call (801)484-9809.

A feature I'd like to see in game editor programs is one that would allow you to modify the characters directly. I used to use a binary editor on the Phantasy games to increase the characters' health and/or magic capability. I could also give them better weapons and armor. That meant I could still go out and explore without knowing what was there, but that my characters were more likely to survive.

I guess we all like to cheat in different ways. ■

Editors for Dungeon Master and Chaos Strikes Back will allow you to modify the dungeon—e.g., you can change the doors so they're already open or easier to open. You can also take out pits, walls, and other obstacles.

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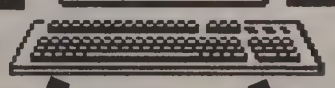

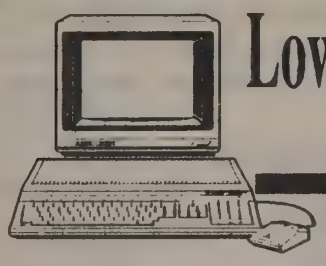

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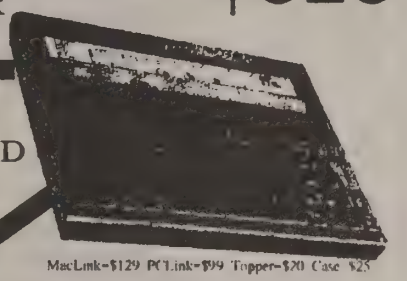

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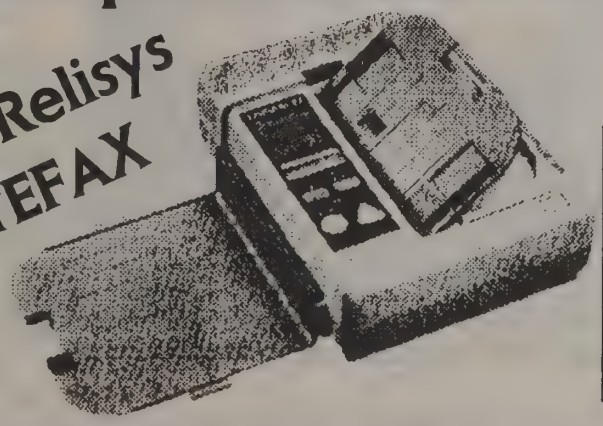

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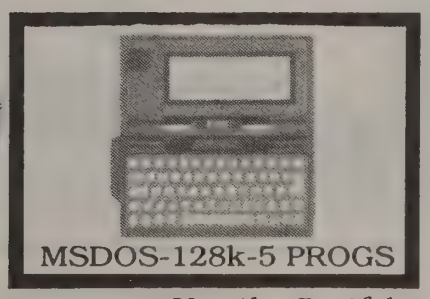

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Continued from page 22

Commerce, state tour boards, and more. British Columbia showed the way.

FANTASIES REALIZED, THAT YOU CAN USE

Ever have things printed? You might ask your printer if they are using soybean-based ink (degradable, though perhaps not *yummy*) or oil-based ink (*yucky!*).

Recycled paper's also becoming much more available—if you ask for it. Business people: Brag about using it—include the "recycled" logo and label on materials you print on it. It's valuable education and the public relations impact justifies the slight extra cost to your bean-counters.

MAGIC SLIPPERS FOR KLUNKY PCs

The following two products are major launch platforms on which numerous entrepreneurs can launch modern micro products.

GEOS from Berkeley's GeoWorks is a low-cost, fast, compact multitasking operating system that runs well on any PC from an 808x or brain-damaged 286 on up. It requires nothing more than a half meg of memory and the smallest of hard disks. It offers a Mac-like windowing graphical user interface (GUI) and includes an ensemble of well-designed, integrated word-processing, spreadsheet, scheduling and communications programs—all as part of the basic package. Its documentation is delightful—especially after suffering for so many years with Microsloth's dastardly DOS documentation.

The other is Digital Research's DR DOS—a major improvement over the Dumpy DOS from the North. It's said that Microsloth's gluttonous Windows 3.0—the memory pig that usually works, if it has a fast enough 386—crashes less often under DR DOS than under MS-DOS. (And, remember, Digital Research was building microcomputer operating systems when Bill was just building BASIC.)

And, did you notice 3Com founder Bob Metcalfe's opinion-piece in the Feb. 25th *ComputerWorld*? It laid down a sound rationale for an antitrust action against Microsoft, concluding that, "Bill's company...is spending too much of its considerable energy damaging dependent competitors.... If Microsoft's abuse of its monopoly isn't illegal, it should be."

Well said, Robert.

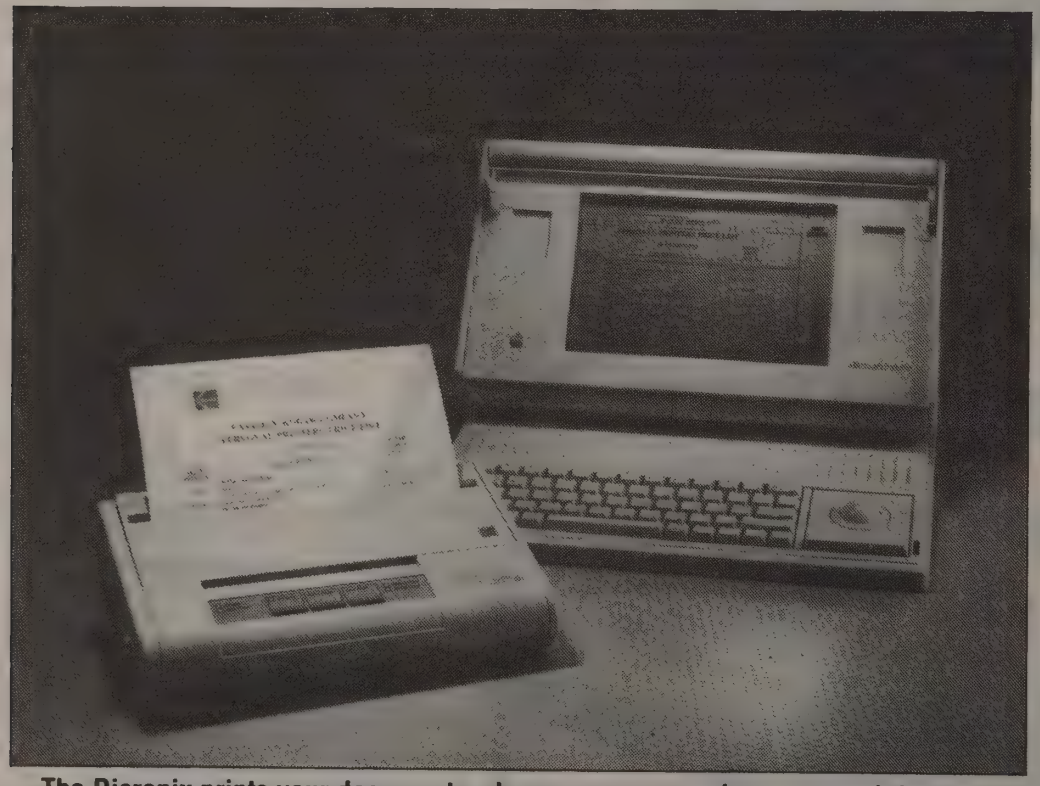
QUICKIES

Hand-held wireless remote controllers should have the most-used buttons near the top, not near the bottom—allowing us fast-draw muppies to aim-'n'-fire with one hand. (Muppies are middle-aged yuppies.)

Furthermore, wireless remotes for home electronics gadgets shouldn't show essential information in LCD displays, since they are often used in low-light or no-light video caverns.

SHARE WHERE? SHARE HERE!

Send *your* fantasies for realization to Jim Warren, Realizable Fantasies, 345 Swett Rd., Woodside, CA 94062. Published proposals will be attributed to their authors unless anonymity is requested. ■



The Dicronix prints your documents wherever you are, when you need them.

Continued from page 108

ing on the capabilities of the device to which it's connected. It supports the Group III standard—used, essentially, by all fax machines in the known world. A high-resolution fax received on the faxmodem and sent to a laser printer is very presentable (though useless as a text file, as noted earlier).

You can fax a document directly from the application in which you're creating it, and if you're already familiar with printing on the Macintosh, you won't find the process arcane: simply choose FaxPrint in the Chooser, then Print as you normally would. FaxPrint supports standard paper sizes and allows you to create your own custom sizes, not to mention half-size cover sheets. The software spools the file to disk, dials the fax machine you've chosen, and gives you a running progress report on the transmission. The Activity Log also tracks success, failure, and error messages for troubleshooting purposes, though the error messages are often uninformative, e.g. "no fax machine answered."

Although this is mentioned nowhere in the documentation, which seems like a bit of an oversight, the COMPORT also works just fine as a 2400 baud Hayes compatible modem. In order to change modes, pull down the Chooser, select FaxPrint, then change the Fax/Data switch to the mode you prefer (automated faxing activity goes into hibernation when you're in data mode, and resumes when you switch back to fax).

Using this tool, the traveling Mac professional can stay in touch with clients and the office in ways that weren't previously possible. Whether it's catching up on the email at 3 am or getting near-instantaneous turnaround on document revisions, you'll keep finding new reasons you couldn't live without it. ■

RESOURCES:

Diconix M150 Plus
($699 list)
Eastman Kodak Company
901 Elmgrove Road
Rochester, NY 14653-6304

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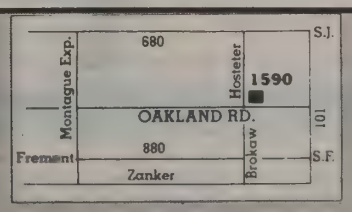

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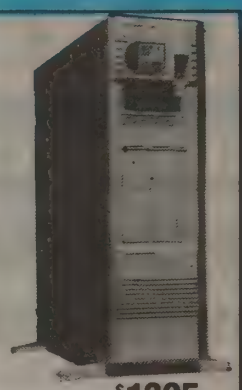

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Precision Model III-X16

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ATI VGA Wonder Plus 1024x768, Interlaced & Non-interlaced	$149

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1024x768, 0.28 dot pitch
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Colorado 120 MB, DJ-10	$245
DC-20000XL 60-120 MB cartridge	$28
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RESOURCES

Calendar Of Events

APRIL

April 15 Automating Your Accounting System Class. Oakland. Informational Data Networks. Call: 1-800-348-5855.

April 15 MS Word For Windows Intro Class. San Francisco. Training Works. Call: (415)243-0100.

April 15 Quattro Pro Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

April 16 Computerized Accounting & Tax Preparation Seminar. Sunnyvale. M & P Computer. Call: (408)738-8578.

April 16–17 Excel For Windows Class. San Francisco. Tek/Link. Call: (408)727-2300.

April 16–19 Spring '91 Professional Lecture Series. Huntington Beach. Ashton-Tate. Call: 1-800-ASHTON-4.

April 17 MS Excel Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

April 17 Omnipage/Typist Seminar. Sunnyvale. M & P Computer. Call: (408)738-8578.

April 17 Presentation By Robert Carr: Pen-Based Software Technology. Palo Alto. SEF. Call: Barbara Cass, (415)854-7219.

April 18 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (415)893-5753.

April 18–19 Quattro Pro Class. San Francisco. Tek/Link. Call: (408)727-2300.

April 20 Accounting Software Training Class. Oakland. North Bay Bookkeeping And Business Services. Call: (707)746-8315.

April 20 Building A PC From Scratch Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

April 20 Computer Show & Sale. Cow Palace. Computer Swap. Call: (415)340-9113.

April 20 Novell Network Workshop. Sunnyvale. M & P Computer. Call: (408)738-8578.

April 21 Computer Show & Sale. Sacramento. MarketPro. Call: (415)388-8893.

April 22 Paradox Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

April 22–24 Multimate 4.0 Class. Santa Clara. Tek/Link. Call: (408)727-2300.

April 22–25 Quattro Pro Class. Santa Clara. Tek/Link. Call: (408)727-2300.

April 23 Advanced System Administration: Maintaining And Troubleshooting A Novell Network Course. Oakland. DATAssociates. Call: Virginia Sykes, 1-800-444-NOVL.

April 23–25 First Silicon Valley Networking Conference. Santa Clara. Systech Research. Call: Kenneth Majithia, (408)924-3930.

April 23 & 30 PAL Programming Class. San Francisco. Training Works. Call: (415)243-0100.

April 23–24 MacroMind Train The Trainer Multimedia Class. San Francisco. MacroMind. Call: Developer/Trainer Services, (415)442-0200.

April 24–26 Asilomar Invitational Microcomputer Workshop. Asilomar. IEEE Computer Society. Call: (415)856-8051.

April 24–26 Time Line 4.0 Seminar. San Francisco. Symantec Training Group. Call: (415)899-7208.

April 25 System Administration: Managing A Novell Network Course. Oakland. DATAssociates. Call: Virginia Sykes, 1-800-444-NOVL.

April 25–26 MacroMind's Interactive Multimedia Seminar. San Francisco. MacroMind. Call: (415)442-0200.

April 26–27 NC5 Spring 1991 Conference. West Valley College, Saratoga. Northern California Community College Computer Consortium. Call: J. Patrick Fenton, (408)867-2200, ext. 7041.

April 26–29 Multimedia Information Systems Conference. Palo Alto. ASIS. Call: (301)495-0900.

April 27 Accounting Software Training Class. Oakland. North Bay Bookkeeping And Business Services. Call: (707)746-8315.

April 27 Computer Show & Sale. Solano County Fairgrounds. MarketPro. Call: (415)388-8893.

April 27 Computer Swap. Santa Clara County Fairgrounds. Computer Swap. Call: 1-800-433-7469.

April 27 Desktop Publishing Workshop. Sunnyvale. M & P Computer. Call: (408)738-8578.

April 27 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

April 28 Computer Show & Sale. Centennial Hall, Hayward. MarketPro. Call: (415)388-8893.

April 28–May 1 International Languages Conference. San Francisco. Borland. Call: CT Meeting Planners, 1-800-942-TURBO.

April 29 Gettin' The Most Out Of Microsoft Windows 3.0 Workshop. Sacramento. Dun & Bradstreet. Call: (212)312-6880.

April 29 & 30 Novell For System Administrators Class. Santa Clara. Training Works. Call: (408)287-8827.

April 30 Gettin' The Most Out Of Microsoft Windows 3.0 Workshop. Concord. Dun & Bradstreet. Call: (212)312-6880.

April 30 Intermediate Lotus Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

April 30 Introduction To Adobe Illustrator Class. San Francisco. Media Alliance's Computer Access. Call: (415)771-7133.

April 30 Laser Printer Seminar. Various Bay Area locations. Laser Care Co. Call: (415)854-4425.

April 30–May 2 Defense & Government Computer Graphics Conference. Anaheim. National Council For Education On Information Strategies. Call: 1-800-343-6944.

continued

THE SOFTWARE SUPPORT CONFERENCE

The Software Support Conference is an online continuing discussion and exchange of issues concerning professional software support. The Conference is located on The WELL in Sausalito, and may be accessed directly or through the CompuServe network. The purpose of this Conference is to be a resource for software support managers and reps at all levels of experience and responsibility, as well as a forum for community discussion of issues, standards, and technologies of providing quality support to users. For information contact: The WELL at (415)332-4335, or Mikael Blaisdell at (415)865-1323 (9–5 PST).

Calendar Of Events continued

April 30–May 2 Third Annual Monterey Software Conference—Getting It Right: Advances In Software Requirements, Design And Management. Monterey. Digital Consulting, Inc. Call: (508)470-3880.

MAY

May 1 Gettin' The Most Out Of Microsoft Windows 3.0 Workshop. San Francisco. Dun & Bradstreet. Call: (212)312-6880.

May 1–3 AppliCASE Conference. San Francisco. Ernst & Young. Call: (201)299-7650.

May 2 Gettin' The Most Out Of Microsoft Windows 3.0 Workshop. Palo Alto. Dun & Bradstreet. Call: (212)312-6880.

May 2 Windows 3.0 Course. Alameda. SymPro. Call: (415)865-0600.

May 3 Desktop Design For PageMaker Users Class. San Francisco. Abacus Training. Call: (415)759-9508.

May 3 Installing NetWare 286 Class. Oakland. Informational Data Networks. Call: 1-800-348-5855.

May 3 OS/2 Concepts Course. Alameda. SymPro. Call: (415)865-0600.

May 3 PowerPoint Class. Santa Clara. Tek/Link. Call: (408)727-2300.

May 4 Computer Show & Sale. Pleasanton. MarketPro. Call: (415)388-8893.

May 4 Building A PC From Scratch Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

May 5 Computer Show. San Francisco. Ft. Mason Shows. Call: (916)725-0228.

May 5 Computer Show & Sale. Santa Rosa. MarketPro. Call: (415)388-8893.

May 5–8 Mapping The Future: Toward The 21st Century Conference. Las Vegas. Association For Systems Management. Call: (216)243-6900.

May 6–7 FileMaker Pro Class. Santa Clara. Tek/Link. Call: (408)727-2300.

May 6 LAN Manager Course. Alameda. SymPro. Call: (415)865-0600.

May 6 Q&A 3.0 Seminar. San Francisco. Symantec Training Group. Call: (415)899-7208.

May 7 Floppy Disk Recording Performance Seminar. Cupertino. Proctor Assoc. Call: (408)725-0627.

May 7–8 MacroMind Train The Trainer Multimedia Class. San Francisco. MacroMind. Call: Developer/Trainer Services, (415)442-0200.

May 7–10 R:Base For DOS Class. Santa Clara. Tek/Link. Call: (408)727-2300.

May 8 Producing Your Newsletter On The Mac Workshop. San Francisco. Media Alliance's Computer Access. Call: (415)771-7133.

May 8–10 Time Line 4.0 Seminar. San Francisco. Symantec Training Group. Call: (415)899-7208.

May 8–9 Floppy Disk Data Interchange Seminar. Cupertino. Proctor Assoc. Call: (408)725-0627.

May 9 MS Word For Beginners Class. San Francisco. Abacus Training. Call: (415)759-9508.

May 9 WordPerfect For The Legal Profession Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

May 9–10 MacroMind's Interactive Multimedia Seminar. San Francisco. MacroMind. Call: (415)442-0200.

May 10 NetWare 286: System Administrator Class. Oakland. Informational Data Networks. Call: 1-800-348-5855.

May 11 Computer Swap. Alameda County Fairgrounds. Computer Swap. Call: 1-800-433-7469.

May 11 Computer Show & Sale. Solano County Fairgrounds. MarketPro. Call: (415)388-8893.

May 11 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

May 13 Automating Your Accounting System Class. Oakland. Informational Data Networks. Call: 1-800-348-5855.

May 14–17 Complete Symphony Class. Santa Clara. Tek/Link. Call: (408)727-2300.

May 14 & 21 Macintosh Office Management Workshop. San Francisco. Media Alliance's Computer Access. Call: (415)771-7133.

May 16 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (415)893-5753.

May 17 Macintosh Business Solutions Seminar. San Francisco. Abacus Training. Call: (415)759-9508.

May 17 Troubleshooting A Novell Network Class. Oakland. Informational Data Networks. Call: 1-800-348-5855.

May 18 Building A PC From Scratch Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

May 18 Computer Swap. Santa Clara County Fairgrounds. Computer Swap. Call: 1-800-433-7469.

May 18 Excel For The Macintosh Class. San Francisco. Media Alliance's Computer Access. Call: (415)771-7133.

May 19 Computer Show & Sale. Hayward. MarketPro. Call: (415)388-8893.

May 20 Paradox Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

May 23 Advanced System Administration: Maintaining And Troubleshooting A Novell Network Course. Oakland. DATAssociates. Call: Virginia Sykes, 1-800-444-NOVL.

May 23 DOS Course. Alameda. SymPro. Call: (415)865-0600.

May 24 PC Repair Class. Oakland. Informational Data Networks. Call: 1-800-348-5855.

May 25 Computer Show & Sale. Concord. MarketPro. Call: (415)388-8893.

May 25 Repair And Troubleshooting A PC Clone Workshop. Oakland. Excel Micro Solutions. Call: (415)836-2040.

May 28–31 Excel For Windows Class. Santa Clara. Tek/Link. Call: (408)727-2300.

May 29 Windows 3.0 Course. Alameda. SymPro. Call: (415)865-0600.

May 29 Intermediate Lotus Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

May 30 Intermediate WordPerfect Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

May 30 System Administration: Managing A Novell Network Course. Oakland. DATAssociates. Call: Virginia Sykes, 1-800-444-NOVL.

May 30–June 2 16th West Coast Computer Faire. San Francisco. The Interface Group, Inc. Call: (617)449-6600.

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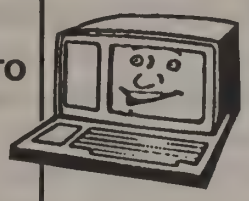
Sun. Apr. 28 - HAYWARD
Centennial Hall
Sat. May 4 - PLEASANTON
Holiday Inn
Sun. May 5 - SANTA ROSA
Sonoma Co. Fairgrounds



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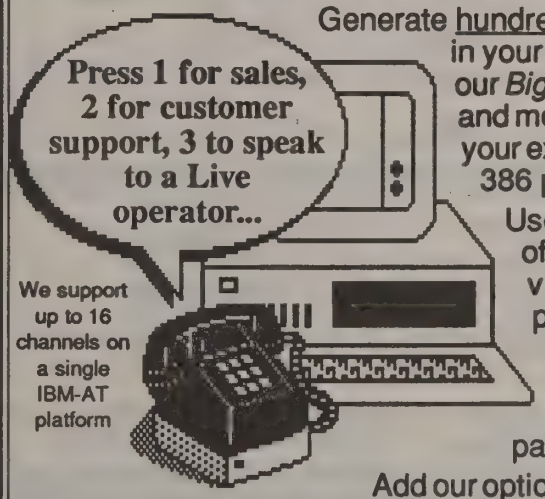
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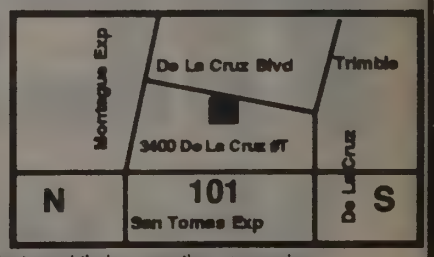

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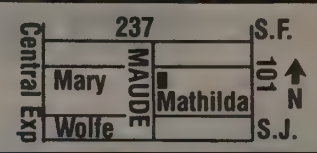

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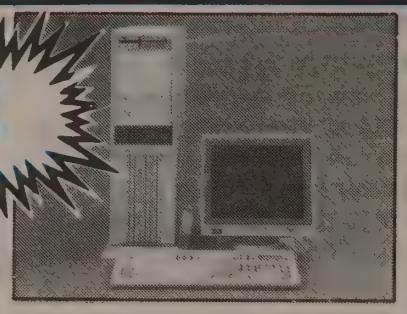

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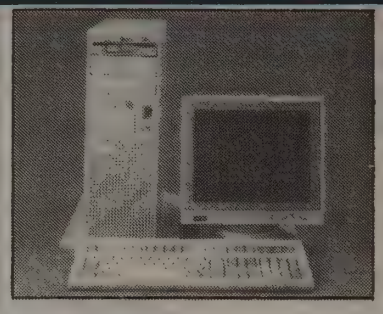

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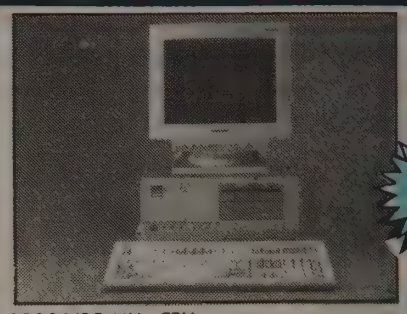

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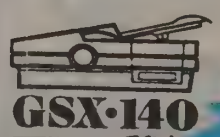

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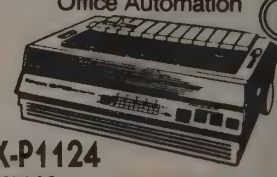

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209

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408

24-Hours-a-Day BBS. (408)448-1126. 24 hrs., 300/1200/2400. Fido Node #:1:143/302. 12 Step Programs including AA, NA, CA, GA, Al-Anon. Echos: Recovery, 12 Step, OASIS and others. Sysop: Mike R. [Exp. #81.]

Bay Area Atari Users Group (BAAUG) BBS. (408)986-0215. 8-N-1, 24 hrs. Sysop: Joe Fischer. [Exp. #81.]

Code Room. (408)266-3818. 8-N-1, 300/1200/2400. A Programmer's BBS, tons of C files! Doors/messages. Sysop: Ramin Akhbari. [Exp. #81.]

Cruzio. (408)423-9995. 1200/2400. If dialing in @ 1200 baud, send Crtl–C on connect. Serving local Santa Cruz Co. with calendar, directory, conferencing, email and USENET newsgroups. Sysop: Chris Neklason and Peggy Dolgenos. [Exp. #82.]

Data Port BBS. (408)259-3019. 1200/2400. Online games, local main, mail networking, file transfers. FidoNet 1:143/106. SaudiNet 90:8009/106. Sysop: Ian Robertson. [Exp. #82.]

Dirt Alert OHV BBS. (408)247-3229. 8-N-1, 24 hrs., 300/600/1200/2400. Text only OHV environmental activists BBS for the protection and preservation of Off Highway Vehicle areas. [Exp. #81.]

Diversified I/O BBS. (408)745-7026. 8-N-1, 24 hrs., 300/1200/2400. Product info and tech support for Diversified I/O Macintosh software. Sysop: Diversified I/O, Inc. [Exp. #81.]

Garlique Graphics, World Famous Images. (408)847-0665. 24 hrs., 2400/9600. When only the best will do. [Exp. #82.]

Lynn-Western Newswires. (408)778-5994 & 778-9656. 8-N-1, 24 hrs., 1200/2400. FidoNet 1:143/304. Professional information on technology, management, and worldwide investment news. Stock Market data online. [Exp. #81.]

Momnet Telecommunications. (408)244-8556. 8-N-1, 24 hrs., 300/1200/2400. New board that promotes income by Network Marketing. Online services. Voice: (408)244-8555. Net Admin>Mark1. [Exp. #82.]

Mountain Retreat BBS. (408)335-4595. Speciality Turbo Pascal, FidoNet, Pascal Echo. Sysop: John Jamieson. [Exp. #83.]

P.I.E. (Programming And Interfacing Enthusiasts) BBS. (408)733-4670. Sysop: Clay Walker. [Exp. #81.]

Pacific Exchange. (408)946-8561. 10 data lines, over 11,000 IBM files, UPI News, restaurant dBASE, Weekly Entertainment Review, and more. Sysop: Ed Peterson. [Exp. #81.]

Portal System (TM). (408)725-0561. 8-N-1, 24 hrs., 300/1200/2400/9600. Multiuser chat, games, SIGs, email, Usenet, and more. Dial direct or use Sprintnet/Telenet or PCPursuit. [Exp. #81.]

Santa Clara County Atari User Group BBS. (408)848-6032. 300/1200/2400. [Exp. #81.]

SCV-TICP, Silicon Valley Refuge of TI Pro Users. (408)296-2503. 8-N-1, 24 hrs., 300/1200/2400. Sysop: Mark Cantrell. [Exp. #81.]

The Electric Pages. (408)253-4280. 300/1200/2400. Commercial and private advertising. Select by category or key words. Online ordering. Voice: (408)253-1709. Sysop: Contemporary Communications, Inc. [Exp. #82.]

The Moose Is Loose BBS. (408)773-9573. 1200/2400/9600. The best msg. base under Sunnyvale's fruit can. Sysop: John Giever. [Exp. #83.]

The Silicon Matchmaker. (408)492-9858. 24 hrs., 300/1200/2400. Electronic PenPal Network, twelve lines. [Exp. #83.]

Vietnam Veterans Valhalla. (408)298-2740. 8-N-1, 24 hrs., 300/1200/2400/9600. Fidonet 1:143/27. Veterans' benefits, International EchoConference, NAMVET Newsletter, Recovery system. [Exp. #81.]

415

& the Temple of the Screaming Electron. (415)935-5845. Raw data for raw nerves, home of NIRVANAnet(tm). Sysop: Jeff Hunter. [Exp. #82.]

AC Co-Op BBS. (415)523-1268. 8-N-1, 2400. Public domain/shareware, message base, Q/A, registration. Sysop: Doyle Dewberry. [Exp. #81.]

Adams Point BBS. (415)444-3054. 24 hrs., 1200. East Bay stuff, messages, text, pvt. gay sub, C64 lores gfx. Sysop: Paul Schnellbecher. [Exp. #82.]

AIDS Info BBS. (415)626-1246. 8-N-1, 24 hrs., 1200/2400. 25Mb dBASE with index, keyword search, online help instructions, no chat. Topics on AIDS including read/write discussions, articles, stats, resource contacts, and private email between users. Text only. Sysop: Ben Gardiner. [Exp. #82.]

Amiga Addicts Anonymous (Triple-A). (415)222-9416. 1200–14400 v.42. Technical discussions. Sysop: Randy Spencer. [Exp. #83.]

Art/online! BBS. (415)255-7045. 8-N-1, 1200/2400/9600. Fine Art forum. Sysop: Jim Raridan. [Exp. #83.]

BayTalk BBS. (415)864-6430. 8-N-1, 24 hrs., 300/1200. The number one electronic source for text of legislation concerning people with disabilities and catalogs of products for people with visual impairments. [Exp. #81.]

BBS Of San Francisco Apple Core. (415)563-8652. 24 hrs., 2400. Lots of fun, supports Apple II and GS computers. [Exp. #82.]

Beggar's Tomb. (415)641-5123. IBM file, msg. bases, adult areas, online games and more. Free. [Exp. #81.]

Bizarre Bazaar BBS. (415)821-4832. 300/1200. WWIV 4.12 software, bilingual (Esperanto) message base and uploads. [Exp. #82.]

Breaking Walls; Building Bridges. (415)827-0804. 24 hrs., 300/1200/2400. Church, gays/lesbians, community, AIDS. Forums, news, confidential mail, care. Sysop: Deacon DVMCC. [Exp. #83.]

California ConneXion Partyline. (415)927-2739. 8-N-1, 24 hrs., 300/1200/8400. 300Mb, 9 lines, chat, worldwide network, 25+ pubs, matchmaking, adults only. Reg required. [Exp. #82.]

CIN-SF Network. (415)239-7925. Free, files, good discussions, topics include: politics, social issues, ethics and rel. from a Catholic perspective Sysop: Hugh O'Regan. [Exp. #82.]

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COMPU-PAL BBS. (415)538-2040. 8-N-1, 24 hrs., 300/1200/2400. Bible texts and related programs, doors, email, and public domain software. Sysop: Richard Yim. [Exp. #83.]

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HTG/Outreach BBS. (415)572-9594. 8-N-1, 24 hrs., 300/1200/2400. High tech gays/lesbian/bisexual/transgender, 4-line, TBBS, security clearance info., activities calendar, GGBA electronic dictionary, echo conf, CB chat, files, free & open access. Sysop: Sagittarius. [Exp. #83.]

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KayFun Bulletin Board. (415)571-9259. 24 hrs., 300/1200/2400/9600. CP/M and DOS. Sysop: Bob Wallace. [Exp. # 81.]

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StarComm BBS (415)922-5628. 300/1200/2400. ANSI/NON-ANSI, MS-DOS compatibles system, online games, file sharing, 20Mb of downloadable files. [Exp. # 83.]

Starnet Connections. (415)949-3133. 8-N-1, 24 hrs., 300–9600. Los Altos. Email, USENET, UNIX, and more. Sysop: Richard Mahn. [Exp. #84.]

SuperResume. (415)524-0416. 8-N-1, 24 hrs., 300/1200. Free features include: Software Engineer Resume Composition Outline, Software Career Strategy Conf., job listings. [Exp. #82.]

Telenaut BBS. (415)454-2313. 8-N-1, 24 hrs., 2400. Home of Telenaut Cartoons & Telenaut Cafe (Computer Arts' Floating Exhibition) featuring original art from all over the world. Sysop: David Newman. [Exp. #83.]

The Abyss BBS. (415)482-5813. 24 hrs., 300/1200/2400. IBM/Mac, file & msg base, email. Sysop: Keymaster [Exp. #82.]

The Micro Foundry BBS. (415)598-0498. 1200/2400/9600. IBM PC and compatibles, over 20,000 files. PC-SIG CDROM Library. [Exp. #83.]

The MIDI-Exchange BBS. (415)771-1788. Home of the San Francisco MIDI User Group and the Casino West Coast FZ-Shareware library. Sysop: Walt Perko. [Exp. #82.]

The Network BBS. (415)795-4268. 24 hrs., 300/1200/2400/9600. Over 600Mb files, also Novell, Clipper, C, dBASE, and accounting msg. areas. 9 multi-user online games. [Exp. #81.]

The Private Eye. (415)378-0627. 24 hrs., No fee. Investigative info adoption searches, criminal history, and more. [Exp. #83.]

Uncle "D" Directory. (415)364-3001. 8-N-1, 24 hrs., 1200/2400. Software for educational purposes and the deaf, mail msgs. [Exp. #83.]

VA Listings. (415)744-7793. 24 hrs., 300/1200/2400. Multiline, VA-owned homes for sale. Sysop: David Piersall. [Exp. #82.]

Viper 1 Premium BBS. (415)535-0231. 8-N-1, 6 pm–midnight, Mon.–Fri., all day Sat. & Sun., 1200. Online games, 42 download areas. Soon to come: online hard disk backup, fax, 2400–38400 bds, and more. [Exp. #81.]

West Coast Syndicate BBS. (415)438-9387. 8-N-1, 24 hrs., 300/1200/2400. SIGs for Atari 8-bit, ST, and IBM. Files, msgs. 30 online games. Sysop: Bill Brown. [Exp. #83.]

Wetware Diversions. (415)864-3874. 8-N-1, 24 hrs., 1200/2400. Multi-line, PC Pursuitable, San Francisco's Public Access UNIX System. (cc@wet.UUCP) Sysop: Christopher Cilley. [Exp. #83.]

Window World BBS. (415)931-0649. 24 hrs. For people who use Windows-type software. Info., shareware, chat. Sysop: Bob Cram. [Exp. #81.]

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707

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Drug Abuse Information (DAIMP). 1-800-825-3736. 8-N-1, 24 hrs., 300/1200/2400. Drug information, statistics, bibliographies, forums, email, downloads and uploads. Free membership, reg. requested. Sysop: Greg Cason. [Exp. #81.]

813

Camelot BBS. (813)756-0714. 8-N-1, 300/1200/2400. First callers get a free tour, members get unlimited use, including free downloads, personal ads, messages and more. An X-rated BBS. [Exp. #82.]

PROFESSIONAL ASSOCIATIONS

Artificial Intelligence Association. Individuals interested in learning about the use and application of AI. Call: Rita Zokaei, (415)574-8225. [Exp. #83.]

Association For Women In Computing. Meetings: 1st Wed., 5:30 pm, San Francisco Marriott. Call: (415)979-8450. [Exp. #86.]

Computer Professionals For Social Responsibility. Meetings: 2nd Wed., 7:30 pm, UC Berkeley, Evans Hall, room 608-7. Call: Judy Stern, (415)643-7499. [Exp. #84.]

Data Processing Management Association. Call: (415)978-0868. [Exp. #84.]

Independent Computer Consultants Association. Meetings: 2nd Wed., 6:00 pm. Meetings are open to non-members and members. Call: ICCA, (415)441-2948. [Exp. #83.]

Society For Technical Communication, Silicon Valley Chapter. Meetings: 4th Thurs. Call: September Jenner, (408)971-2336. [Exp. #83.]

Software Entrepreneurs' Forum. Call: Barbara Cass, (415)854-7219. [Exp. #83.]

The Association For Worldwide Software Management. Meetings: 2nd Tues., Milpitas Sheraton. Call: Mikael Blaisdell, (415)865-1323. [Exp. #84.]

United Sysops Association. Meetings: 2nd Wed, 7:00 pm, Coco's, 1035 S. Mary Ave., Sunnyvale. Assoc. for system operators and BBS users. Call: Bill Strouse, (415)453-3321. [Exp. #84.]

Women's Computer Society. Meetings: Last Tues. Call: Tanya Halepota, (415)949-3936. [Exp. #85.]

Writer's On-line Association Of Technical Communicators. Meetings: Weekly, Berkeley. Call: Cynthia Kolnick, (415)673-5819. [Exp. #86.]

USER GROUPS

ACCOUNTING

Champion Accounting Systems User Group. Fremont. Newsletter, BBS, ideas and help. Call: Garhart, (415)657-5880. [Exp. #84.]

San Francisco Bay Area Platinum User Group. Call: Steve Koss, (415)562-2754, or Jim Britton, (415)576-3209. [Exp. #81.]

AMIGA

AAA (Amiga Addicts Anonymous). Meetings: 3rd Tues., Concord Water District Bldg., 1311 Concord Ave. Classes, BBS, pub. dom. disks. Call: (415)935-0829. [Exp. #86.]

ALF—Amiga Learners Forum. Meetings: 3rd Sun., 6:00 pm, Cupertino Library. Beginners group. Call: (408)262-9334. [Exp. #85.]

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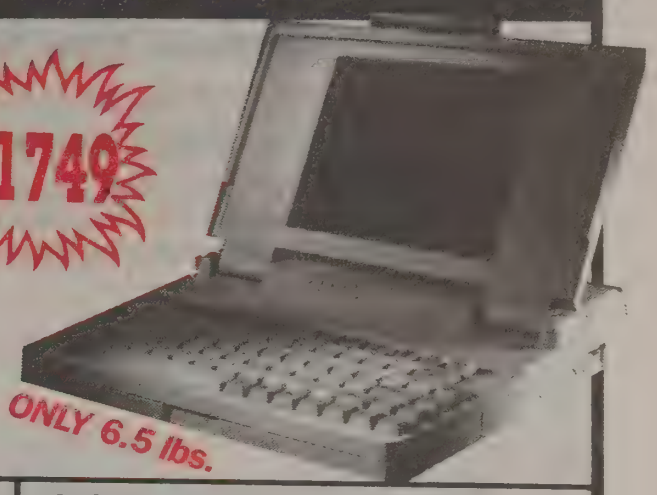

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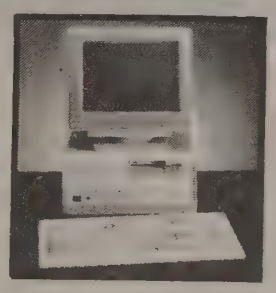

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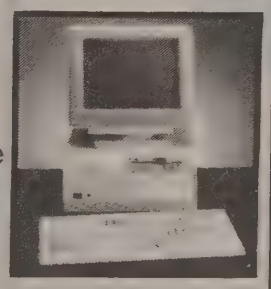

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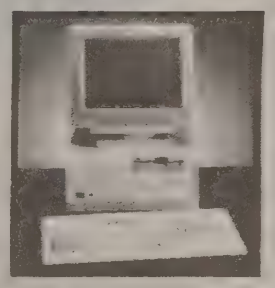

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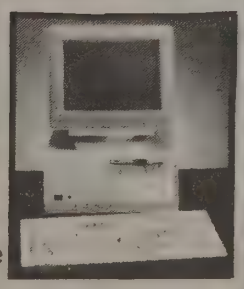

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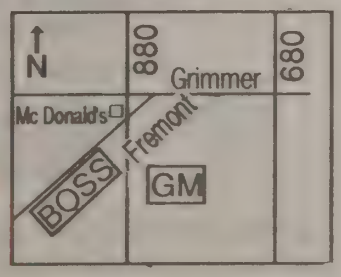

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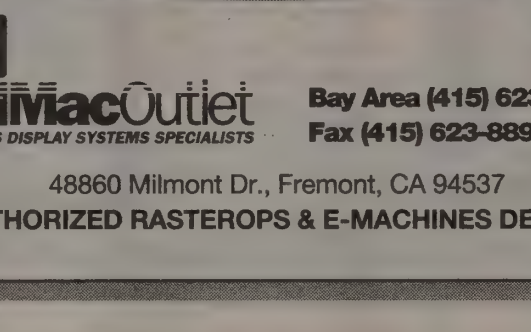

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USER GROUPS

AWEST Amiga Users. Meetings: 1st Wed., 7:00 pm, Computer Showcase, 2739 Geary. Call: (415)584-8406. [Exp. #86.]

COW—Commodore Owner's Workshop User Group. Meetings: 3rd Thurs., 7:00 pm, San Bruno Parks & Rec Bldg. No dudes! Call: Steve Beale, (415)355-8927, BBS (415)359-5975. [Exp. #81.]

FAUG—First Amiga User's Group. Meetings: 1st Tues., 7:00 pm, Palo Alto Hyatt. Call: Mike Fisher, (415)855-9426, BBS (415)595-2679. [Exp. #84.]

APL

APL Bay Area Users Group. Meetings: 2nd Mon., 7:00 pm. Variable. Call: Tibor Horvath, (415)283-5611. [Exp. #86.]

APPLE

San Francisco Apple Core. Meetings: 3rd Tues., 7:00 pm, SF State University, Hensill Hall, Rm. 205. An Apple II user group. BBSes, newsletter, demos, mentoring, swaps, DTP and telecom sub groups. Call: (415)771-5830. [Exp. #84.]

APRICOT

Apricot User Group, East Bay Chapter. New members welcome. Call: Ron, (415)828-9643. [Exp. #85.]

AT&T UNIX

AT&T Computer User Group-North Bay. Meetings: 1st Wed., new user education, 6:00 pm, program, 7:00 pm, San Francisco AT&T Bldg., 50 Fremont St. Call: Joe Mahoney, (415)584-6510; BBS (415)829-6027. [Exp. #84.]

AT&T Computer User Group-South Bay. Meetings: 3rd Wed., new user education, 6:00 pm, program, 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Joe Lipsig, (408)733-6522; BBS (408)946-7734. [Exp. #84.]

AT&T Computer Users Group. Meetings: 2nd Wed., 6:30 pm. Refreshments, technical support and informal discussions. Also, Sunnyvale DOS and UNIX groups. Call: Jim Lansing, (415)885-6631. [Exp. #84.]

AT&T UNIX Computer User Group-South Bay. Meetings: 4th Wed., new user education, 6:30 pm, program, 7:00 pm, Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Thad Floryan, (408)985-7100; USENET, thad@cup.portal.com. [Exp. #84.]

ATARI

Bay Area Atari Users Group (BAAUG). Meetings: 1st Mon., 7:30 pm, Agnews Hospital Auditorium, Palm Rd. and Circle Dr., San Jose. Call: Joe Fischer, (408)988-3065. [Exp. #86.]

COAST User Group. Meetings: 3rd Wed., 1514 University Ave., Berkeley. Specializing in DTP, CAD, and serious use. Call: Bill Yerger, (415)548-8999, BBS (415)845-1789. [Exp. #85.]

San Leandro Computer Club. Meetings: 1st Tues., 8:00 pm, San Leandro Public Library. Atari Club, 8/16/32-bit. Call: Keith Sammons, (415)887-2008. [Exp. #84.]

Santa Clara County Atari Users Group. Meetings: 2nd Wed., 7:00 pm, San Jose Computer Showroom, 1278 Alma Court. Formerly South County Atari Users Group. Call: Ron Reade, (408)225-7162, BBS (408)848-6032. [Exp. #84.]

CAD/CAM

AutoCAD DCA Engineering Software Users Group. Meetings: 3rd Wed. Call for location. Call: Mike Foley, (415)734-0707. [Exp. #84.]

Cupertino Chapter Of 64/More Commodore User Group. Meetings: 3rd Sun., 6:00 pm, Cupertino Library. Call: (408)262-9334. [Exp. #85.]

CWEST Commodore 64/128 Users. Meetings: 3rd Wed., Fort Mason. For more information write: 1564 Waller #B, San Francisco, CA 94117. Call: (415)626-9946. [Exp. #83.]

Marin ACAD User Group. Meetings: 1st. Thurs. Call: Gigi Bollinger-Himes, (415)491-4722. [Exp. #84.]

S.F. AutoCAD User Group. Meetings: 1st Mon., 6:30 pm, SFAIA, 130 Sutter St., 6th fl. Call: Katie Price, (415)923-9228. [Exp. #81.]

SF Bay Area C.A.S.E. Users Group. Meetings: Once per quarter. Call: David Plotkin, (415)842-6706. [Exp. #84.]

Textile Computer Users Group—TCUG. Meetings: Bimonthly, 1st Sun., 10:00–noon. Bedford Hotel, San Francisco. Call: (415)284-1635. [Exp. #84.]

COMMODORE

CWEST Commodore 64/128. Meetings: 3rd. Wed., 7:00 pm, Fort Mason. For info: 1564 Waller #B, San Francisco, 94117. Call: (415)626-9946. BBS, (415)552-9320. [Exp. #86.]

North Valley Chapter Of 64/More Commodore User Group. Meetings: 2nd Sat, 10:00 am. Milpitas Library. Call: (408)262-9334. [Exp. #85.]

COMMUNICATION

Toastmaster International. Meetings: Every Wed., 6:00 pm, Laguna Honda Hospital, San Francisco. Improve your communication and presentation skills. Call: Maurine Martin, (415)882-7335 or (415)759-0634. [Exp. #84.]

dBASE

dBASE IV SIG. Meetings: 1st Tues., Ashton-Tate, 6411 Guadalupe Mines Rd., San Jose. SIG of the Silicon Valley dBase Language Group. Call: Charles King, (408)724-7024. [Exp. #84.]

dBASE SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 333 California St., San Francisco. Call: Mark Webster, (415)647-3675. [Exp. #83.]

East Bay Database User Group. Guest speakers. Call: David Chilcott, (415)653-1303, BBS (415)652-1763. [Exp. #85.]

SQL_Forum. Meetings: 1st Thurs., 6:30 pm, 394 Pacific Ave., San Francisco. Topics include client/server computing & SQL database servers. Speakers, demos. Call: (415)695-2748. [Exp. #83.]

SVDLG dBASE SIG. Meetings: 1st Tues., 6:30 pm, ASI, ABSI Birchwood Systems, Suite 480 W., 2001 Gateway Place, San Jose. Call: Fletcher Johnson, (408)283-1333. [Exp. #85.]

SVDLG FoxPro SIG. Meetings: 2nd Thurs., 6:30 pm, ASI, ABSI Birchwood Systems, Suite 480 W., 2001 Gateway Place, San Jose. Call: Fletcher Johnson, (408)283-1333. [Exp. #85.]

DESKTOP PUBLISHING

Desktop Publishing SIG/SFPCUG. Meetings: 3rd Tues., 6:00 pm, 660 Market St., Ste. 215, San Francisco. Call: Eric Leong, (415)635-0159. [Exp. #83.]

San Mateo Ventura Publisher Users Group. Call: Elinor Cruz, (415)366-5317. [Exp. #81.]

EPSON

Bay Area Epson Salts. Meetings: 2nd Tues., 7:30 pm, 2611 Broadway, Redwood City. Call: Joe, (415)364-9232, or Tom, (415)992-5475. [Exp. #86.]

GENEALOGY

Contra Costa County Genealogical Society/Computer User Group. Meetings: 1st Sat. of odd-numbered months. Call: Susan, (415)372-6996. [Exp. #81.]

Contra Costa PAF User Group. Meetings: Last Sat., Call: Susan, (415)372-6996 or Julia, (415)933-6555. [Exp. #82.]

IBM AND COMPATIBLES

Desktop Publishing SIG/SFPCUG. Meetings: 3rd Tues., 6:30 pm, 660 Market St., Ste. 215, San Francisco. Call: (415)391-1333. [Exp. #81.]

Desktop Video SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 3333 California St. Visitors $3. Call: Mike Shurtz, (415)522-1797. [Exp. #83.]

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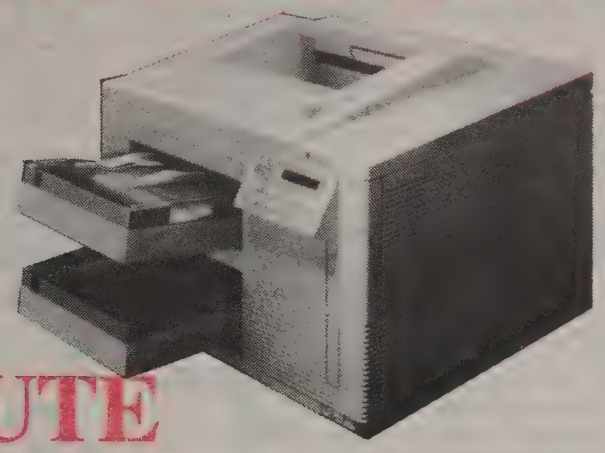

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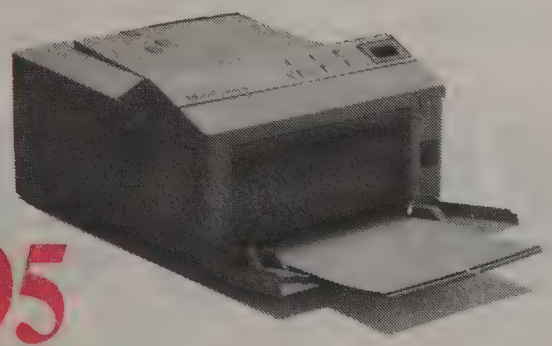

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USER GROUPS

UCSF, 3333 California St., San Francisco. Visitors $3. Call: Adam Baum, (415)841-5628. [Exp. #83.]

EastBay FOG. Meetings: 2nd Wed. All microcomputers, MS-DOS, CP/M. Call: (415)272-9099. [Exp. #86.]

GeoWorks SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 3333 California St. Visitors $3. Call: Larry Yurdin, (415)527-2647. [Exp. #83.]

Golden Gate Computer Society (GGCS). Meetings: 4th Mon. 7:30 pm, San Rafael Community Center. Call: (415)927-2909. BBS (415)927-1216. [Exp. #83.]

Investments SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 3333 California St. Visitors $3. Call: George Montgomery, (707)795-5673. [Exp. #83.]

Lotus 1-2-3 SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 3333 California St., San Francisco. Call: Jerry Stern, (415)566-9675. [Exp. #81.]

Napa Valley PC User Group. Meetings: 2nd Wed., 7:30 pm, 10 Chapel Hill Dr., Napa. Call: Lee Schwab, (707)257-2675. [Exp. #85.]

PCjr SIG/SFPCUG. Meetings: 3rd Mon. (if holiday, 4th Mon.), 6:15 pm, UCSF, 3333 California St. Visitors $3. Call: John King, (415)472-7035. [Exp. #83.]

San Francisco PC Users Group. Meetings: 3rd Mon., 7:30 pm, UCSF Laurel Heights, 333 Califronia St., San Francisco. Call: (415)221-9166, BBS (415)621-2609. [Exp. #82.]

San Lorenzo User Group. Meetings: 2nd Tues. and the 20th, 7:00 pm, Gathering Place in Ben Loman, Santa Cruz County. Call: Chuck Schafer, (408)338-7348, BBS (408)335-4672. [Exp. # 86.]

WordPerfect SIG/SFPCUG. Meetings: 3rd Mon., 6:30 pm, UCSF, 3333 California St., San Francisco. Visitors $3. Call: Kendall Callas, (415)821-1310. [Exp. #83.]

KNOWLEDGE-MAN

Bay Area KnowledgeMan (And Guru) User Group. Meetings: 1st Tues., 6:30 pm. JNZ, Inc., Lafayette. A forum for discussion and info concerning mdbs products, esp. KnowledgeMan and Guru. Call: (415)947-4878, BBS (415)935-4878. [Exp. #86.]

LAPTOPS

Bay HPX HP Laptops & Handhelds. Meetings: 2nd Sat. Call: Michael Felsenstein, (415)564-8279. [Exp. #84.]

MACINTOSH

North Coast Mac Users Group. Meetings: 3rd Thurs., 7:30 pm. Lark 2004, Santa Rosa Jr. College. SIGs on development, programming, and multimedia authoring, networking, graphics, and more. Call: Reed Hopkins, (707)542-1089, BBS (707)792-1871. [Exp. #85.]

MacSEF. Meetings: 3rd Tues., 7:00 pm, Call: Tony Meadow, (415)644-9400. [Exp. #84.]

MARKETING

HTEC Marketing SIG. Meetings: 4th Wed., 6:30 pm. Call: Hal Johnson, (415)441-6897. [Exp. #81.]

MULTIMEDIA

Macromind Multimedia User Group And Video SIG. For more information, call: (415)442-6200. [Exp. #83.]

The International Interactive Society—IICS. Meetings: 2nd Tues., 7:00 pm, UCSF Laurel Heights Conference Center. Call: (415)328-7318. [Exp. #85.]

MUSIC

Computer Music SIG. MIDI and beyond. All computer types welcome. Call: Bob Brander, (415)592-6993. [Exp. #86.]

NOVELL

Silicon Valley Novell User Group. Meetings: 3rd Wed., 6:30 pm, Coco's, 1305 S. Mary Ave., Sunnyvale. Call: Bill Strouse, (408)453-3321. BBA (408)453-3326. [Exp. #86.]

The East Bay Novell Users Group. Call: George M. Gold, (415)444-4899. [Exp. #86.]

The San Francisco Novell Users Group. Call: Thomas Thibault, (415)944-9500. [Exp. #86.]

OS/2

Smalltalk VPM Experts. Meetings: 3rd Thurs., 7:30 pm. Call: Dave Hurrell, (408)866-4647. [Exp. #81.]

PARADOX

Bay Area Paradox User Group—BAPALS. Meetings: 4th Tues., 4:00 pm, SF State University Downtown Campus. Forum for users and developers at all levels. Call: Robert Smiley, (415)957-4656. [Exp. #81.]

Paradox SIG/SFPCUG. Meetings: 3rd Mon., 6:15, UCSF, 333 California St., San Francisco. Call: Richard Haven, (415)566-8076. [Exp. #83.]

PROGRAMMING LANGUAGES

Fourth Interest Group Of North Bay. Meetings: 2nd Sat., 1-5 pm. 2055 Center St., Berkeley. Tutorial at noon. Call: Leonard Morgenstern, (415)376-5241. [Exp. #85.]

SVDLG C SIG. Meetings: 3rd Mon., 7:00 pm, Techmart, Santa Clara. Call: Fletcher Johnson, (408)283-1333. [Exp. #85.]

R:BASE

R:Base Users Group Of Oakland. Meetings: 2nd Thurs., 9:00 am. Call: Scott, (415)451-5316. [Exp. #85.]

TEXAS INSTRUMENTS

Texas Instruments Professional Computer Users Group. Meetings: 4th Thurs., Magnolia Inn, 176 S. Bernardo, Sunnyvale. Call: Thor, (415)386-5237, or Dr. Bill, (415)671-5237. [Exp. #81.]

UNIX/XENIX

UNIX SIG. Meetings: 2nd Tues., Oracle Corp. Fitness Center, Redwood Shores. Sponsored by Software Entrepreneurs Forum. Call: Priscilla Rowe, (415)776-0513. [Exp. #85.]

UNIX SIG/SFPCUG. Meetings: Last Wed., 7:30 pm, Call: John Tait, (415)386-9230. [Exp. #83.]

UNIX/XENIX User Group Of N. CA. Meetings: Call: Ren Just, (707)664=0820 or BBS (707)795-1721. [Exp. #83.]

WINDOWS

Windows 3 & Applications SIG/SFPCUG. Meetings: 3rd Mon., 6:15 pm, UCSF, 333 California St., San Francisco. Call: Ron Person, (707)539-1525. [Exp. #83.]

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South Bay WordPerfect User Group. Meetings: Saratoga Community Library. Dates vary, free. Call: Martin Van Derpool. (408)238-8434. [Exp. #85.]

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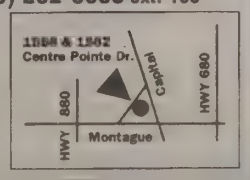

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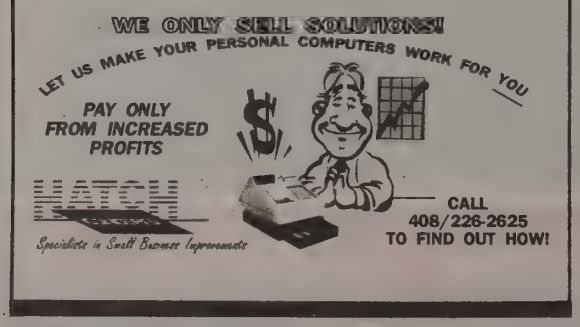
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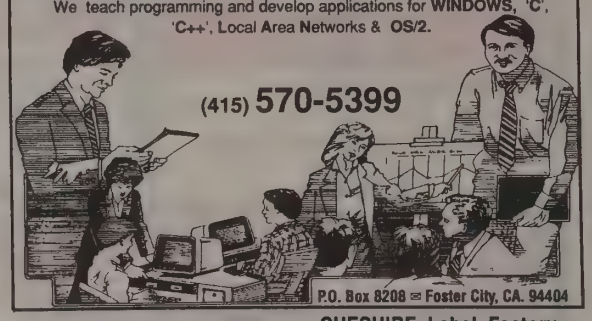

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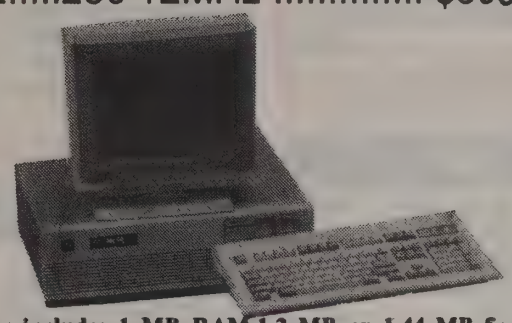

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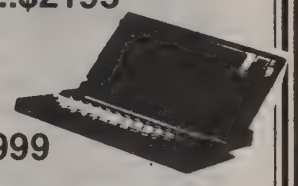

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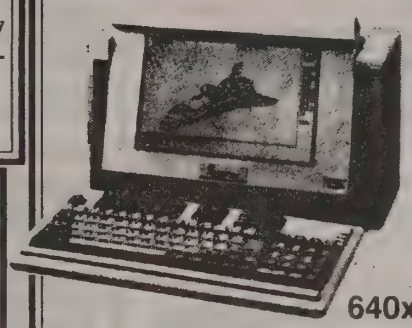

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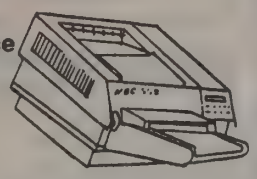

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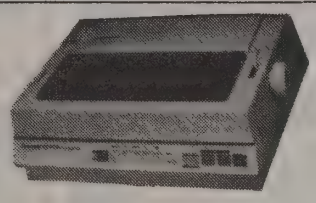

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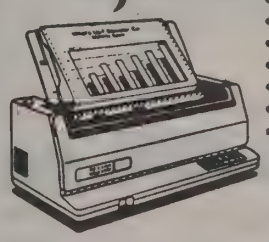

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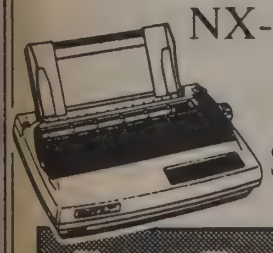

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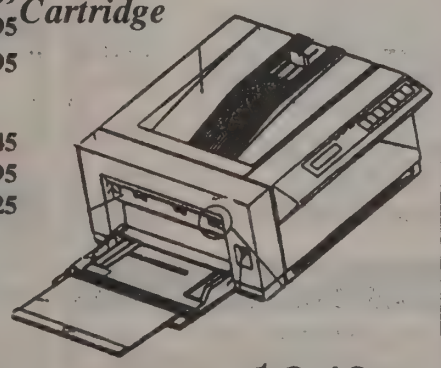

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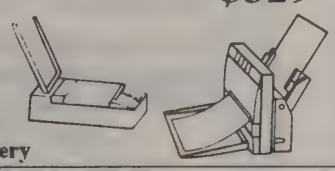

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Robert Newman
Mountain View, Calif.

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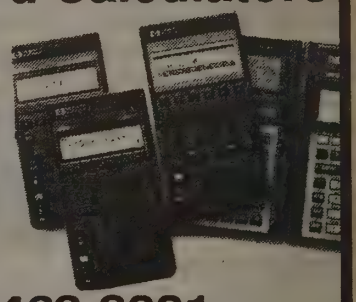

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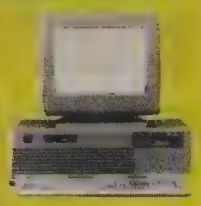

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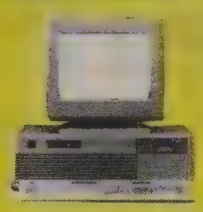

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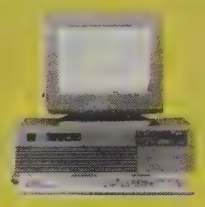

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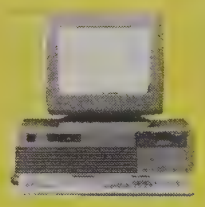

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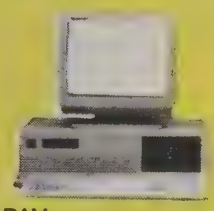

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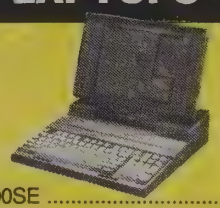

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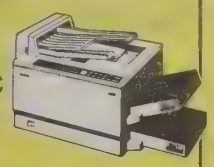

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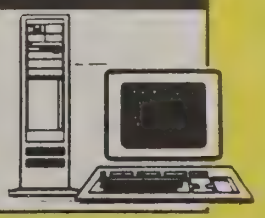

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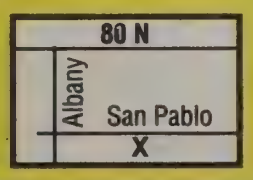

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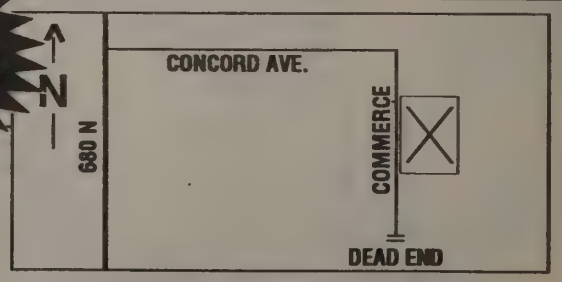

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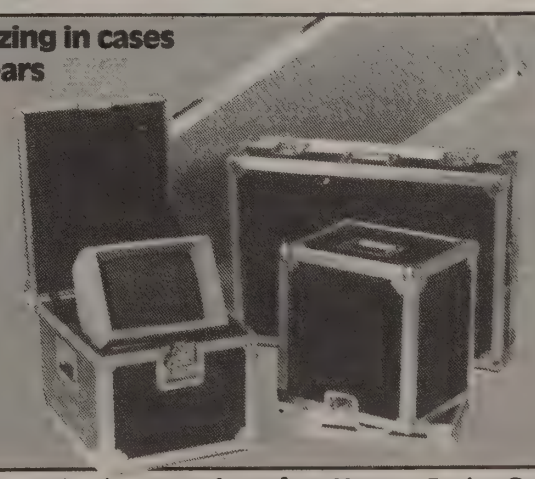

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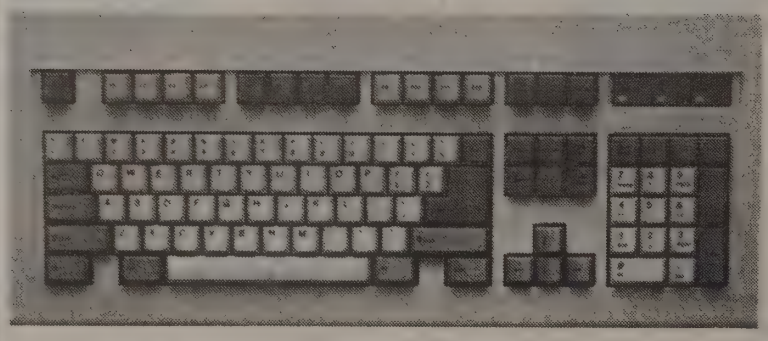

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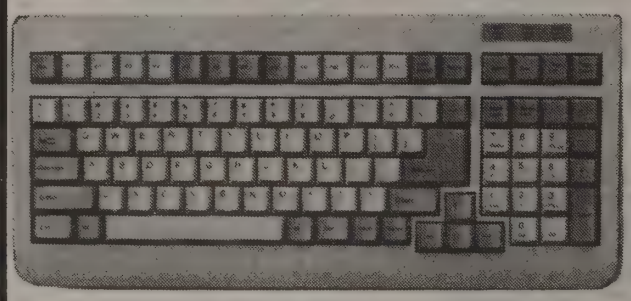

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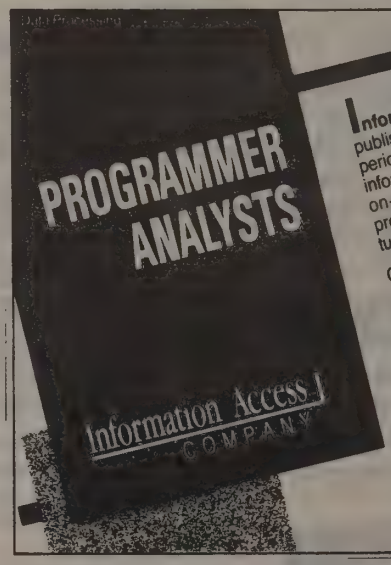

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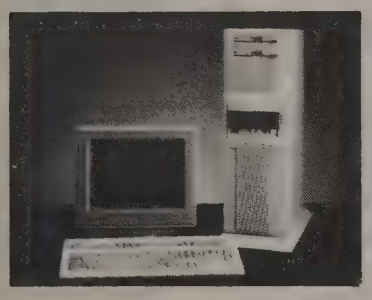

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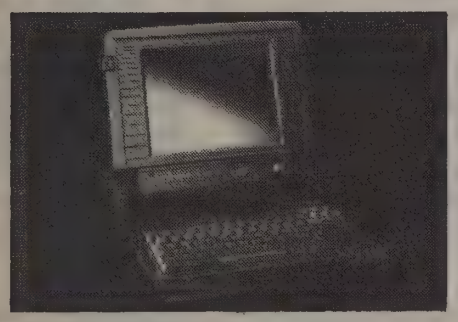

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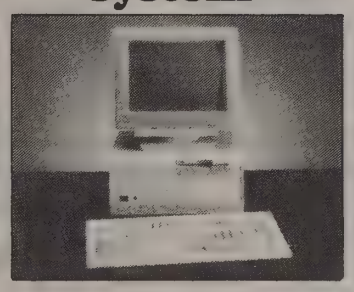

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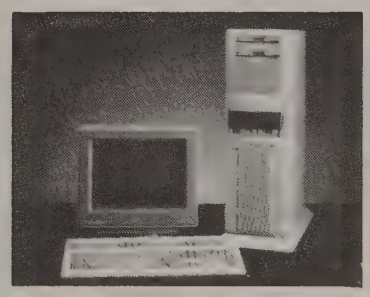

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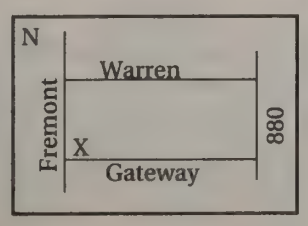

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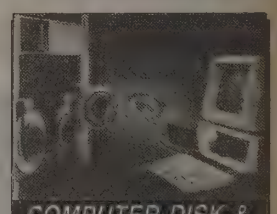
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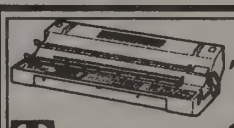
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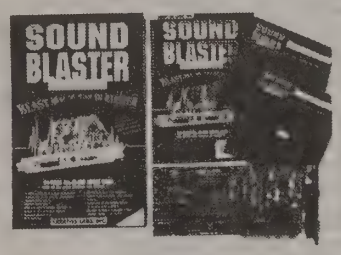

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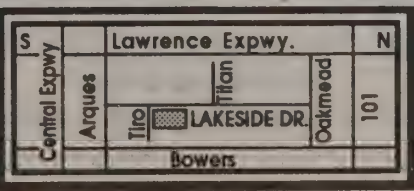

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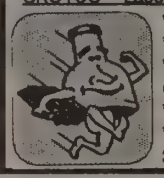

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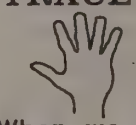

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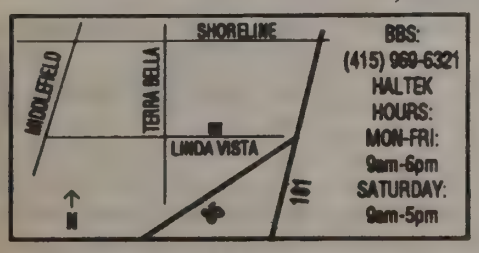

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3 F ASSOCIATES 31
AC INTERNATIONAL 52
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ACR SYSTEMS 186
ADDTECH RESEARCH, INC. 144
ADOLPH GASSER 40
ADVANCE COMPUTER SYSTEMS 4,5
ADVANCED SYSTEM TECHNOLOGY 18
ALPHA FINE COMPUTER FURNITURE 68
AMERICAN COMPUTER SYSTEMS 3
AMERICAN DIGITAL DATA ASSOC. 216
AMT INTERNATIONAL 102,103
AMTA COMPUTERS, INC. 99
ANOVA MICROSYSTEMS 163
APEX TECHNOLOGIES 98
ARK SCIENCE CORP 65
AROMA TECH INC. 241
ASA COMPUTERS 179
ASP COMPUTER PRODUCTS 26,36
AUTHORIZED TECHNICAL SERVICES 228
AVIA 237
BELMONT SYSTEMS, INC. 74,75
BETA NINETY COMPUTER/C & J COMPUTER 183
BLACKSHIP COMPUTER 173
BOSS COMMUNICATIONS 225
BOZEMAN MARKETING GROUP, INC. 189
BUSH COMPUTERS 209
CAD -N- GRAPHICS 24
CENTRAL COMPUTER SYSTEMS 196,197
CENTURIAN SURPLUS, INC. 141
CLUB PC 180,181
COMPULAN 68
COMPUNET 233
COMPUTER ART 155
COMPUTER SELECTION 43-45
COMPUTER SHOWCASE 210
COMPUTER SWAP 12
COMPUTERLAND OF FREMONT 117
COMPUTERLAND OF HAYWARD 53
COMPUTERLAND OF SERRAMONTE 27
COMPUTERTIME 12
COMPUTOWN 34,35
CONVEX RESOURCES 8
COPPER CONNECTION 244
CORPORATE SYSTEMS CENTER 101
D & J COMPUTERS 21
DATA ONE 156
DATAWEST COMPUTERS 188
DEMO SOURCE 219
DOMINO COMPUTERS 33
DOMINO SELF SERVICE CENTER 13
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EDIMAX COMPUTER COMPANY 151
EFI'S DISCOUNT COMPUTER 242
ELITE COMPUTERS & SOFTWARE 7
ELITE OFFICE AUTOMATION, INC. 165
EMPAC INTERNATIONAL 152,153
ESPANORE, LTD. 192
EVERGREEN COMPUTER INT'L 174,175
EVERNET SYSTEMS, INC. 184
FRY'S ELECTRONICS 2,123-136,247
GENERIC COMPUTER SYSTEMS 244
GIGABYTES 108
GLOBAL SOFT 54
GOLDEN VALLEY TECHNOLOGY 199
GREAT ADVANCED TECHNOLOGY CORP. 177
GREENLEAF INTERNATIONAL 185
GUENTHER COMPUTER PRODUCTS 150
H D SYSTEMS 89-91
HALTED SPECIALTIES 182
HALTEK ELECTRONICS 243
HERB'S DISCOUNT SOFTWARE 204
HI Q SYSTEMS 158,159
HI-TECH USA 229
HISPANIA IMPORT & EXPORT 52
HYPER COMPUTER / OMS 115
ICS COMPUTERS 143
INTO COMPUTER 20
JDR MICRODEVICES 11
JEMINI ELECTRONICS 220,221
KIMEX CORPORATION 109
KIS COMPUTER CENTER 227
KOSTEL 184
KRIS TECHNOLOGIES 116
LIU COMPUTER / KINGSTAR 19
MACOUTLET CORPORATION 226
MANEX COMPANY 237
MARKET PRO 219
MCTEK SYSTEMS 166
MEMREL CORPORATION 97
MICRO AGE OF PLEASANTON 56
MICRO DISTRIBUTION CENTER 206,207
MICROCOM COMPUTERS 160
MICROLINE 193
MICROLINK SYSTEMS, INC. 146,147
MICROSELL / MONARCH COMPUTERS 235
MICROWORLD 213
MIRACLE COMPUTER 169-171
MS ENGINEERING 38,39
MYRIAD COMPUTERS 10
NATIONAL DISKETTES 56
NETWORK ASSOCIATES CORP. 58,59
NETWORK INNOVATIONS 95
NEXT STOP COMPUTING 201
NOE VALLEY COMPUTERS 226
NORDIC COMPUTERS 236
OAKLAND MICRO CENTRE 205
ORYX INTERNATIONAL 73
PACIFIC DATA SYSTEMS 106
PAN PACIFIC COMPUTER CORP 48
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PARS INTERNATIONAL COMPUTER 70,191
PC BY ROOT 169-171
PC CENTER 239
PC WAREHOUSE 69
PILLARCO 17
POLYWELL COMPUTERS 61
PRESTIGE COMPUTER 150
PRINTER WORKS 145
PRO STAR 191
QUARTERDECK OFFICE SYSTEMS 248
RAFFLES 187
RAGTIME 28
RAMCOMP 142
ROGER WILLIS COMPUTERS 167
SAMSUNG PACIFIC 23
SANS EGAL, INC. 224
SANTRON COMPUTER TECHNOLOGY 14,15
SCHWAB COMPUTER CENTER 164
SF MICRO 93
SFSU EXTENDED EDUCATION 219
SOFT WAREHOUSE 57
SONGTECH INTERNATIONAL, INC. 211
STORAGE SYSTEMS ENGINEERING 200
SUNLIGHT COMPUTER PRODUCTS 55
SURAH 232
SYSPER TECHNOLOGY 215
TANSTAAFL MANUFACTURING, INC 70
TECHNOLAND 139,238
TEG MICRO TECHNOLOGY 72
TEK COMPUTERS 71
THE COMPUTER STORE 231
TITAN INTELLIGENT SYSTEMS, INC. 149
TLC COMPONENTS 104
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TOTE-A-LAP 29
TOWER COMPUTER 62,63
TREE BASED FINANCIAL SOFTWARE 224
TSL CORPORATION 107
UNCLE RALPHS 111-113
UNIVERSAL COMPUTER PRODUCTS 161
USM DISTRIBUTORS 46,47
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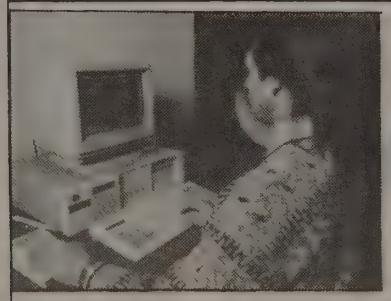

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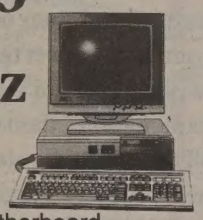

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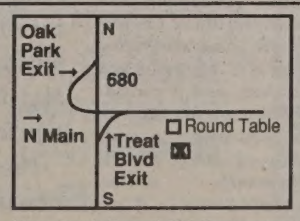

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Can A Bowler Patent The Hook Ball? Is An Unusual Sewing Stitch Patentable?

These and other issues are headed your way as the software patent issue begins to simmer.

BY JOHN C. DVORAK

Over the past couple of years I've been writing columns describing the software patent situation. After years of not granting patents, the patent office now seems intent on granting patents for every algorithm submitted to it. The courts are upholding most of these patents, and developers are complaining that the future of software is threatened.

Only one person has seriously challenged my complaints. Terry Ritter is a famous hardware and software engineer partly responsible for the development of the 6809 chip, among other things. Here he comments on a column I wrote called "The Death of Code" (PC Magazine, Nov. 13 1990). Obviously Ritter has a vested interest, but his points are good. I invite reader feedback.

Dear John:

I have read your November 13 column, "The Death of Code," a number of times, and am rather disturbed by it. Not because code is about to die, but because code (in the sense I think you mean: "independent programmer or small company makes good!") is already dead, or so much like it as makes no difference.

DVORAK'S LAST COLUMN

Attempting to directly compete with the huge resources of Microsoft or Lotus is more of a management game than programming. Patent protection has the possibility of improving the situation. There was a good analysis of the Lotus versus Paperback Software decision in the *Communications of the ACM* for November 1990 (pp. 27-33). The article basically said that nobody really knows what the decision was, and that the decision is unfinished anyway, being still under appeal.

© 1991 by John C. Dvorak. All rights reserved. *John C. Dvorak graduated from the University of California. He is a contributing editor of* PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

I do find the idea of interface protection disturbing (though hardly "The death of code") but this is a copyright issue rather than a patent issue. In fact, if a program interface was protected by patent, that protection would expire thrice over in a normal lifetime.

I think you really missed the boat with respect to patents. Patents are the public disclosure of concepts in return for a period of monopoly. Failure to provide patent protection means that innovations would be hidden away, protected by trade secret and contract law. It is no coincidence that this is the way software is currently protected. Consequently, we never see source code for economically important systems. Is it any surprise that programmers continually re-invent the wheel? Public disclosure is generally worth the transient monopoly expense because it builds a body of useful information. Patents also disclose the latest R&D results, which provide a basis and direction for additional research.

Patents are not about "a series of instructions"; patents are about new underlying methods of operation. Such mechanisms may be realized mechanically, electronically, or under software control, and yet still be the same mechanism. Are we to allow an invention which is nominally mechanical or electronic to be avoided simply by implementing the same idea in software? Given powerful embedded micros and unenforceable software infringement, certain classes of patent would become completely worthless. The result would be to move toward trade secret and contract protection, which means a loss of public disclosure, which is a loss for society.

In the same way that new mechanical or electronic devices are developed, new software ideas may well require substantial research prior to design and coding. If, when such a program is released, the big guys can pick up the new idea (using mounds of programmer-ants to disassemble the code) and then use it, how can an innovative but small software company protect their R&D investment?

You said: "The patent system was designed to protect small-time inventors from exploitation," then you dismiss that goal! But patents still protect small time inventors (at least as a goal: most patents do not earn back their issue fee). Large companies like Microsoft might well prefer to avoid the whole concept of patents, since the company has programming resources, marketing, and advertising clout which inherently dominates new competition. Large companies generally win against small competitors unless the competition has a monopoly position under law.

It is the small guys who need patent protection! Independent programmers who actually do come up with something new desperately need the protection that a patent provides, or they must resign themselves to forever being just "labor" in a capitalist economy. An individual can apply for, prosecute, and receive a patent on an idea for relatively modest fees (say $650, through prosecution and issuance), if said individual is willing to work (say two or three full man-months per patent) and learn. It is not easy, but it is possible. The best handbook available is *Patent It Yourself*, 2nd Ed., by David Pressman ($32.95 ppd. from Nolo Press, 950 Parker St., Berkeley, CA 94710; 800-992-6656).

Last year I used the Pressman book (plus WordPerfect, Generic CADD, a LaserJet II, and an HPGL cartridge) to apply for protection on two apparently new mechanisms in the art of cryptology (a very touchy area!). One of the applications has been "allowed" and should issue 25 Dec 90. Although these new mechanisms include the possibility of software realization, they are intended to cover any realization: mechanical, electrical, pneumatic, fluidic, etc. Hopefully, this will allow me to protect an idea the big guys did not have. It also enhances public knowledge in a nominally secret area, and encourages research on new classes of cryptographic mechanism.

Sincerely,

Terry Ritter

Having seen Hayes, the modem maker, win recently in a suit for a patent it holds for having a one-second guard time around the +++ command, I'm not convinced that things are going in the right direction. I'd like to invite any developers or coders to send to me, c/o MicroTimes, *their thoughts and insights on this matter.*—John. ■

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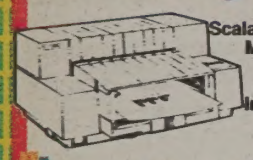

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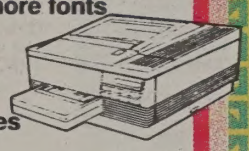

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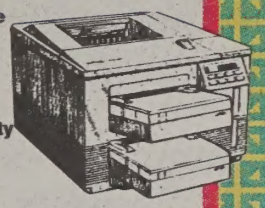

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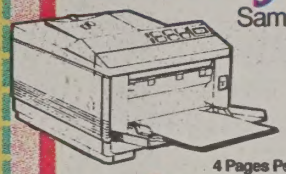

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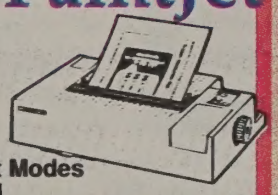

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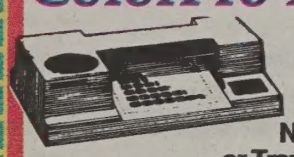

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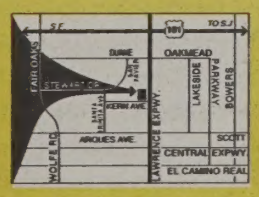

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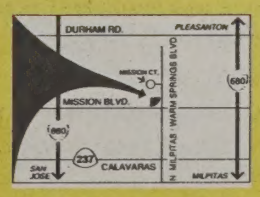

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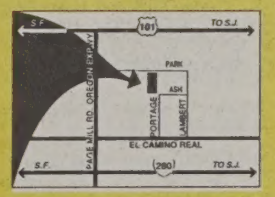

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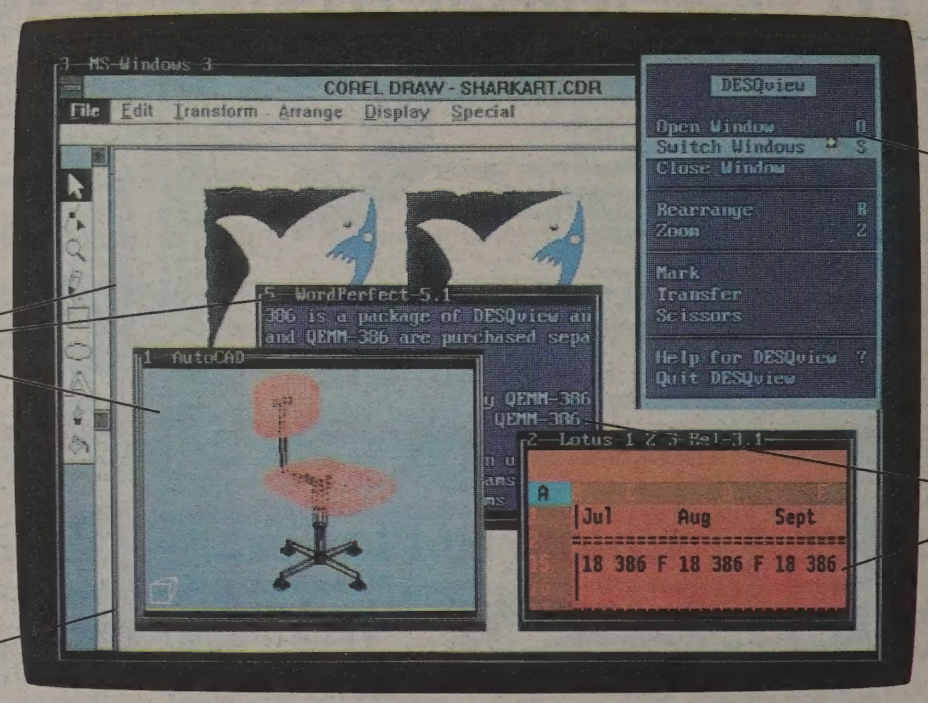

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